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At that test 5 out of 24 cows reacted. They were removed from the herd and slaughtered. Two months later the 19 remaining, plus one "natural addition" [this presumably means a home-bred heifer which had calved in the interval] were tested; 7 reacted and were slaughtered. Less than 60 days later the remaining 13 were tested and all reacted. Within a period of three months and five days the entire herd had thus become reactors.

The owner restocked by purchasing 12 non-reactors. These were tested in October and 2 reacted. In January, the 10 remaining were tested and 2 more reacted. In March the remaining 8 were tested and all reacted. Between October 1942 and March 1943, all of the new herd of 12 cows had become reactors.

During the following three months the owner acquired 5 new tested cows. At the test in June 1943, 1 of these reacted and was slaughtered. At the August test there were 9 cows made up of 3 of the cows which had passed the June test, 5 purchased as non-reactors and one "natural addition". Two of these reacted and were slaughtered. The remaining 7 were retested in October and 5 of them reacted. The remaining 2 reacted later.

After each test all reactors had been slaughtered promptly, the sheds cleaned and sterilized and the sources from which purchased cows had been obtained checked. Examinations showed no generalized cases, most of the cows showed localized lesions and some no visible lesions.

At this stage a special investigation to determine the source of infection was made. It was found that the owner had been a patient in a TB. sanatorium from March 12th to May 3rd 1942. Cultures were obtained from his sputum and on typing proved to be bovine. Cultures from the lesions in the slaughtered cows were also typed and proved to be bovine. It was concluded that the owner had been the source of infection.

T. considers that closer co-operation is necessary between the veterinary officer who tests the dairy herds and the medical officer in charge of the TB. sanatorium, with a view to more frequent typing of cultures isolated from human sputum. He is of the opinion that this would reveal a higher incidence of bovine type infections in man in America. The undetected existence of boyine TB. in man may explain the source of infection in some of the so-called "problem herds".—M. C.

SMITH, C. R. (1944.) **Tubercle bacilli in the stomach contents of healthy, normal adults exposed to tuberculosis.**—*Amer. Rev. Tuberc.* **50.** 330–343. **2115**

The stomach contents of 149 normal adult human beings who were members of the staff in a sanatorium and consequently exposed to TB. were examined by culture and g. pig inoculation with completely negative results. S. reviews the literature and states his belief that the examination of stomach contents for tubercle bacilli is a reliable test which when positive signifies "in all probability an active open case of tuberculosis". —M. LEVI.

MUNRO, W. T. (1944.) **Tubercle bacilluria in the child.**—*Edinb. med. J.* **51.** 101–106. **2116**

Tubercle bacilluria in the child is a manifestation of generalized but not necessarily miliary TB. Microscopic lesions are present in both kidneys in all cases. With treatment they heal, otherwise they may form ulcero-cavernous lesions. Of 37 cases studied in children in a rural district, 17 were due to the bovine type of tubercle bacillus; of four that died, three were of the bovine type.—R. M. LOOSMORE.

GERSHENFELD, L., & SCHAIN, P. (1942.) **Modification of the tubercle bacillus treated with diphtheria antitoxin.**—*Quart. Bull. Sea View Hosp.* **7.** 400–414. **2117**

A human strain of the tubercle bacillus was gradually adapted to growth on a medium containing from 80–100 units of diphtheria antitoxin per ml. The strain was found to be altered by this treatment in both virulence and cultural characters. The organisms were markedly increased in pathogenicity for g. pigs and rabbits, producing the Yersin type of disease, with early death. Growth of the culture *in vitro* could be obtained in 2–3 days on the special medium used, the colony formation being that of a typical S variant of the parent R strain.—ISOBEL W. BROCKLEHURST.

VELICK, S. F. (1944.) **The chemistry of the lipids of tubercle bacilli. LXVI. Concerning the structure of tuberculostearic acid.**—*J. biol. Chem.* **154.** 497–502. [For previous parts, see *V. B.* **14.** 9.] **2118**

CREIGHTON, M. M., CHANG, L. H., & ANDERSON, R. J. (1944.) **The chemistry of the lipids of tubercle bacilli. LXVII. The lipids of the human tubercle bacillus H-37 cultivated on a dextrose-containing medium.** —*Ibid.* 569–579. **2119**

CREIGHTON, M. M., & ANDERSON, R. J. (1944.) **The chemistry of the lipids of tubercle bacilli. LXVIII. The lipids of cell residues.**—*Ibid.* 581–585. **2120**

EDENS, C. O., CREIGHTON, M. M., & ANDERSON, R. J. (1944.) **The chemistry of the lipids of tubercle bacilli. LXIX. The composition of the acetone-soluble fat of cell residues from the preparation of tuberculin.**— *Ibid.* 587–592. **2121**

GINGER, L. G., & ANDERSON, R. J. (1944.) **The chemistry of the lipids of tubercle bacilli. LXX. Concerning the dextrorotatory fatty acids of the acetone-soluble fat of cell residues from the preparation of tuberculin.**—*Ibid.* **156.** 443–451. **2122**

GINGER, L. G. (1944.) **The chemistry of the lipids of tubercle bacilli. LXXI. The determination of terminal methyl groups in branched chain fatty acids.** —*Ibid.* 453–456. **2123**

GINGER, L. G., & ANDERSON, R. J. (1945.) **The chemistry of the lipids of tubercle bacilli. LXXII. Fatty acids occurring in the wax prepared from tuberculin residues. Concerning mycocerosic acid.** —*Ibid.* **157.** 203–211. **2124**

GINGER, L. G., & ANDERSON, R. J. (1945.) **The chemistry of the lipids of tubercle bacilli. LXXIII. Studies on phthiocerol.**—*Ibid.* 213–219. **2125**

LXVI. Derivatives of natural tuberculostearic acid and of synthetic dl-10-methylstearic are identical; the two acids therefore have probably the same formula and structure. The free, natural and synthetic acids have, however, a difference in melting point of 10°C. and the suggestion that this discrepancy might be due to the scarcely detectable optical activity of the natural product has been confirmed by the author by X-ray diffraction studies of the amides of the two acids.

LXVII. The amount of lipoids in acid-fast bacteria varies from strain to strain and also with the composition of the medium. In this study, the classic strain H37 was grown in a modified Long's synthetic medium in which the glycerol was replaced by 10% glucose and a complete analysis of the lipoid fraction was performed. The total lipoids amounted to 30·6%, which is comparable with the lipoids obtained from H37 on glycerol media. The only lipoid fractions that could be isolated were acetone-soluble fat and a wax of low melting point; the lipoids did not contain any phosphatide. On analysis the acetone-soluble fat was found to be similar in composition to the fat elaborated on glycerol media and to contain tuberculostearic acid, phthioic acid and the pigment phthiocol. The fat contained no glycerol but a carbohydrate which was

probably trehalose. The low-melting wax gave on analysis several characteristic components of tubercle bacillus wax, *viz.*, mycolic acid, phthiocerol, dextrorotatory acids analogous to the phthioic acid and a polysaccharide that contained pentose. Unlike tubercle bacilli grown on a glycerol medium, no high melting wax could be found.

LXVIII. The lipoids in tubercle bacilli residues from the preparation of P.P.D, were extracted and separated into phosphatide, low-melting wax, acetone soluble fat, chloroform-soluble wax and firmly bound lipoids. The solubility of the various lipoid fractions was similar to the corresponding fractions from strain H37 but differed in the composition and cleavage products of phosphatide and wax fraction. This difference is due to the variety of the strain grown for P.P.D. production.

LXIX. The acetone-soluble fat from the cell residues of tubercle bacilli grown for the preparation of tuberculin was similar in composition to fats previously analysed and it was confirmed that the fatty acids were esterified with trehalose, not glycerol. Cleavage products on saponification included phthiocol and anisic acid. The liquid saturated fatty acids contained several acids in addition to tuberculostearic acid and phthioic acid and one of these acids was isomeric with the tuberculostearic acid.

LXX. An examination of the dextrorotatory fatty acids of the acetone-soluble fat of an unidentified strain of tubercle bacilli used for P.P.D. production showed the presence of four acids differing in specific optical rotation and molecular weight. One of these acids was phthioic acid; the remaining three belonged to the same homologous series and probably had molecules containing doubly branched carbon chains.

LXXI. The Kuhn-Roth procedure for the determination of terminal methyl groups attached to carbon involves their oxidation with chromic acid, followed by the estimation of the acetic acid produced. G. describes a slight modification of the method and shows how it can be applied to assist in elucidation of the structure of the fatty acids of the tubercle bacillus.

LXXII. Fatty acids isolated from the chloroform-soluble wax of tubercle bacilli residues from P.P.D. production included palmitic, stearic, and hexacosanoic acids, and an unsaturated acid, probably oleic acid. Mycocerosic acid was isolated *via* its ether-soluble lead salt and methyl ester, and purified by precipitation of its barium salt from benzene with methyl alcohol. It was obtained as a waxy solid, M.P. 27°–28°C., $[\alpha]_D$, *i.e.*, the angle of rotation of polarized light by the substance dissolved, in this case, in chloroform, −5° to −6°, with formula $C_{30}H_{60}O_2$. In addition to the laevorotatory mycocerosic acid, tuberculostearic acid and dextrorotatory acids similar to phthioic acid were isolated as their ether-soluble lead salts.

LXXIII. Phthiocerol, a dihydroxy alcohol of formula $C_{34}H_{67}{\cdot}(OH)_2{\cdot}OCH_3$ or $C_{35}H_{69}{\cdot}(OH)_2{\cdot}OCH_3$, was isolated from the wax obtained from tubercle bacilli residues from P.P.D. production. It crystallized readily from ethyl acetate or acetone, M.P. 72°–73°C., but did not yield satisfactory derivatives. Reduction of the unstable iodo derivative of phthiocerol gave the hydrocarbon phthiocerane, M.P. 59°–60°C. and formula $C_{34}H_{70}$ or $C_{35}H_{72}$. Phthiocerane probably has a branched chain structure resembling 9,26-dimethyl-tetratriacontane, which is synthesized by electrolysis of tuberculostearic acid. However, neither this compound nor *n*-tetratriacontane was found to be identical with phthiocerane.—Alex. B. Paterson.

Bourgeois, E. (1944.) Paratuberkulöse Darmentzündung bei einem Sikahirsch. [*Mycobacterium johnei* **infection in a Japanese deer.**]—*Schweiz. Arch. Tierheilk.* **86.** 119–120. **2126**

A Japanese deer in a zoological garden became emaciated and died after a few weeks' illness. The lesions were confined to the small intestines and mesenteric lymph nodes and there was severe anaemia. Acid-fast organisms were present in very large numbers in the mesenteric lymph nodes, in large numbers in the mucous membrane and contents of the small intestine and in moderate numbers in the wall and contents of the caecum. They were not demonstrated in the mucous membranes of the colon or rectum, but in the faeces they were found in about the same numbers as in other infected animals.—R. M. Loosmore.

Lovell, R., Levi, M., & Francis, J. (1944.) **Studies on the survival of Johne's bacilli.**—*J. comp. Path.* **54.** 120–129. **2127**

Three experiments were planned in order to study the powers of survival of *Mycobacterium johnei* under natural conditions.

In one experiment an emulsified saline suspension of a culture was added to bottles of distilled water, tap water and pond water containing mud. The bottles were kept at room temperature and tested at monthly intervals for nine months and again after 13 months. Johne's bacillus was recovered in culture after nine months, but not after 13 months. No difference was noted in the survival times in the different kinds of water.

In the second experiment, intestinal scrapings from cases of Johne's disease were suspended in unsterilized river or ditch water and kept in the open air. Organisms were recovered after 135 and 163 days, and in one case after 113 days in water that was frozen between the first and thirtieth days of exposure.

In the third experiment naturally infected faeces in shallow porous bowls were exposed in the open to the full effect of weather conditions. The faeces were sometimes fluid, sometimes frozen and at other times dried by the sun. The organisms survived 152–246 days, depending on the conditions in which the faeces were kept. They appeared to remain viable longer under moist conditions.

In all cases the organisms recovered were treated with antiformin and examined morphologically as well as culturally.

The authors conclude that infected pastures should not be considered safe for at least a year and endorse the recommendations of Dunkin (1928) and Minett (1933) to break up manure on infected pastures, to dispose of yard manure on cultivated land and to drain or fence all ponds.—Ann F. Russell.

Robbins, M. L., & Griffin, A. M. (1944.) **Studies on Listerella monocytogenes. I. The effect of various killing agents on the flagellar antigens.**—*J. Immunol.* **48.** 63–68. [Authors' summary copied *verbatim.*] **2128**

The use of minimal heat, formalin, chloramine-T, merthiolate or phenol as killing agents does not alter significantly the over-all capacity of *Listerella monocytogenes* to elicit the production of antibodies. Flagellar factors B and D are not affected by any of the agents tested. Flagellar factor A is not affected by minimal heat or formalin but is degraded by chloramine-T, merthiolate, and phenol. Flagellar factor C may be influenced by merthiolate.

*de Blieck, L., & Jansen, J. (1943.) Listerellose bei Tieren. A. Listerellose bei Ferkeln. [**Listeria infection in animals. A. In piglets.**]—*Antonie van Leeuwenhoek ned. Tijdschr. Hyg. Microbiol.* **9.** 93–103. **2129**

*Jansen, J., & van der Hurk, C. F. G. (1943.) Listerellose bei Tieren. B. Listerellose bei der Ziege. **[Listeria infection in animals. B. In goats.]**—*Ibid.* 9. 104–106. **2130**

[Absts. from absts. in *Zbl. Bakt. I.* (*Ref.*). **144.** 347–348.]

A. An outbreak of listeriasis in piglets is described. An isolated culture of listeria of which a detailed description is given, was pathogenic for pigs, rats, g. pigs, rabbits and canaries, but not for ferrets, fowls, pigeons or ducks. The culture was identical with others isolated from human beings.

B. The authors describe an outbreak of listeriasis in goats.—R. M. Loosmore.

*Lichtenstern, H. (1942.) Über das Vorkommen von Pasteurellen bei Katzen. **[Occurrence of pasteurella in cats.]**—*Inaug. Diss., Hanover.* [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **51.** 139.] **2131**

L. isolated pasteurella from the mucus of the mouth, nose and trachea of 11 out of 101 cats from the Hanover district. These organisms were pathogenic for mice, the disease lasting 2–4 days. The occurrence of pasteurella in cats is not associated with any particular environment or set of conditions.—R. M. Loosemore.

Poddubskiĭ, I. V., & Alikaev, V. A. (1941.) Rol' paratifoznoĭ infektsii pri abortakh kobyl v usloviyakh polnotsennovo i nepolnotsennovo kormleniya. **[The role of salmonella in equine abortion under conditions of correct and incorrect feeding.]**—*Trud. XV Plen. vet. Sekt. Akad. sel'khoz. Nauk, Moscow, 1939.* [*Diseases of Horses.*] pp. 67–78. **2132**

Investigations were made in five studs stocked with pure- and cross-bred light and heavy horses. Most of the abortions occurred during the autumn and winter, when the mares were stabled or fed inadequately; in spring, when there was access to pastures, the rate of abortions subsided. The greatest percentage of abortions was in young mares in their first pregnancy. In the authors' opinion, feeding inadequate with respect to Ca : P ratio and vitamin content and the neglect of hygienic conditions are important factors in lowering the resistance of the dam to a latent salmonella infection. Abortion due to bacterial factors should be regarded not from the standpoint of infection alone, but also as a complex of various factors which lower the resistance of the body.—A. Moldawsky.

Donatien, A., & Boué, A. (1944.) Une epizootie de ghedda dans la région de l'Oued Guir (Sahara oranais). **[An outbreak of " ghedda ", a disease of dromedaries in the Oued Guir region of the Sahara.]**—*Arch. Inst. Pasteur Algér.* **22.** 171–174. **2133**

The authors describe an outbreak of a severe disease in camels associated with febrile symptoms and usually having fatal results. The chief lesions found P.M. consisted of petechiae and haemorrhages distributed throughout the body. An organism isolated from the long bones of three different animals and also from the blood of a sick animal was presumed to be the cause and proved to belong to the salmonella group. The term " ghedda " should include a group of diseases with a somewhat similar syndrome.—S. J. Gilbert.

Huddleson, I. F., Wood, E., & Cressman, A. (1945.) **The differential diagnosis of bovine brucellosis from the bactericidal action of blood plasma.**—*Science.* **101.** 358–359. **2134**

This is a brief communication introducing a new test for the detection of cattle infected with *Brucella abortus*. In herds in which several animals are infected it has been frequently observed that many develop only low serum-agglutination titres. In the use of this test on such animals a long time must elapse and several tests be made before their actual status can be determined. Most suspicious reactors in herds in which infected animals have been present for many years will in time become negative. In the herd in which the infection is of recent date it has not been possible to predict the future of low-titre reactors.

The authors claim that the test now described overcomes this difficulty and reveals animals actually infected. The plasma from sterile citrated blood is tested by diluting volumetrically from 1 : 10 to 1 : 1,280 in tryptose broth. 150,000 organisms in 0·1 ml. are added to each tube and the tubes incubated. The results are recorded at 24 and 48 hours. The action of the plasma is measured by the absence or degree of growth (turbidity) in the tube, compared with a control tube inoculated at the same time. In no case has a plasma sample from infected animals inhibited the growth of *Br. abortus* in any of the routine dilutions employed. Plasma samples from young calves usually inhibit growth in all dilutions up to 1 : 160. Plasma samples from heifers and adult cows after exposure to and recovery from natural infection inhibit the growth of *Br. abortus* in a higher dilution than samples from normal animals.—S. J. Gilbert.

Live, I., & Stubbs, E. L. (1944.) **Reproductive data of a herd with brucellosis of long standing.**—*Vet. Ext. Quart. Univ. Pa.* No. 96. pp. 3–7. **2135**

The reproductive data over a period of years of a herd of 106 cattle were studied by dividing them into four groups, *viz.*, I, 63 cows found positive to agglutination tests, II, 21 cows negative prior to addition to the herd, III, the same cattle after addition to the herd and IV, 22 heifers negative at the time of addition to the herd.

The reproductive years of each animal were calculated from the date of first breeding as a heifer to the last freshening before slaughter. In groups I, III and IV, an average of 15–16 months of reproductive life was necessary to produce a normal calf, while in group II the time interval required was only a little over 11 months. Retained placentae were 2–3 times greater in the infected groups. Abortions did not exceed 60% in any of the groups. It is evident that brucella infection had a detrimental effect on reproductive efficiency.

—S. J. Gilbert.

Johnson, L. E., & Graham, R. (1945.) **Results of bacteriological examination of aborted bovine fetuses from brucellosis-free herds.**—*Cornell Vet.* **35.** 36–40. **2136**

Various agents apart from *Br. abortus* have been described as being associated with the premature birth of calves, but with the exception of *Trichomonas foetus* none has assumed widespread economic importance.

In a study of foetuses from two brucella-free herds, *Salmonella cholerae-suis* was recovered from one foetus. A pregnant heifer was inoculated intravenously with 5 ml. of a saline suspension of this organism and aborted in 16 days. The organism was recovered from the internal organs of the foetus. From another foetus *Erysipelothrix rhusiopathiae* was isolated and three pregnant heifers were inoculated. One gave birth to a dead calf and the organism was recovered from the stomach. In a third case *Corynebacterium pyogenes* was isolated and an inoculated pregnant heifer aborted a foetus, from which this organism was recovered.

—S. J. Gilbert.

—. (1944.) **Adult vaccination against brucellosis in cattle.**—*J. Amer. vet. med. Ass.* **105.** 190–193. **2137**

This is a report published with the approval of the Committee on Animal Health of the National Research Council, U.S.A.

The control procedures for brucellosis now in use in the U.S.A. are outlined. The success attained by calfhood vaccination with strain 19 has stimulated a demand for the vaccination of mature cattle. While such evidence as is available would indicate that vaccination of adults may have a place in control measures under certain conditions, much more information is needed before it can be recommended. There are certain disadvantages to be overcome. Cattle vaccinated as adults remain positive to the blood test over relatively long periods and a considerable percentage fail to return to a negative status. Legal restrictions bar the movement of cattle while they remain positive.

While it seems well established that the vaccination of calves under nine months of age with strain 19 does not result in the establishment of the brucella organism in the udder, this is not clearly established for animals vaccinated as adults. Adequate safeguards against possible infection of human beings should be provided until it has been shown that the strain is not dangerous for man. A greater hazard to human health arising from the vaccination of adult cattle is that cattle may remain positive for long periods or even permanently, and as agglutination tests do not differentiate between the vaccinal and more virulent strains, cattle infected with virulent strains may be retained in vaccinated herds and the milk may be infected. In such herds the milk should be pasteurized and the vaccinated adult cattle permanently identified.

A series of recommendations follow as to the conditions in which strain 19 might be used, the ultimate goal being the elimination of brucellosis from the animal population. Research must point the way to new and more effective methods of control and the Committee emphasize the need for an enlarged research programme. A number of recommendations are made as to the course of such research work.—S. J. GILBERT.

POLYKOVSKIĬ, M. D. (1940.) Syvorotka protiv dizenterii yagnyat. **[Lamb dysentery antiserum.]**—*Veterinariya, Moscow.* No. 3. pp. 3–9. [French summary.] **2138**

Lamb dysentery antiserum was obtained from horses immunized by the Weinberg and Barotte method entailing the intravenous injection of the formol-killed bodies of *Clostridium welchii* Type B, followed 4–5 hours later by the subcutaneous injection of the supernatant fluid of the culture in which they had been grown (anavaccine).

The antiserum is antibacterial and antitoxic. When used prophylactically, it should be given to new-born lambs in a subcutaneous injection of 5 ml.; for curative purposes the dose should be increased to 10–20 ml. and injected as early as possible.—E. CHERKESI.

*JANSEN, J. (1941.) Clostridium perfringens-Infektionen des Verdauungs- und Urogenitalapparates. **[*Cl. welchii* infection of the alimentary and urinogenital tracts.]**—*Antonie van Leeuwenhoek ned. Tijdschr. Hyg. Microbiol.* **7.** 130–136. [In German.] [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*). **144.** 398.] **2139**

Clostridium welchii was isolated in pure culture from the urine of a living dog and subsequently from an inflammatory lesion of the surrounding tissues of the prostate and bladder of the same dog after death; it was also isolated from a catarrhal condition in the stomach wall of another dog. This organism fermented glycerol, but not inulin. J. compares the site of infection in these cases with known infections of mucous membranes by this organism in other animal species.

—R. M. LOOSMORE.

STRELKOV, N. M. (1943.) Bor'ba so stolbnyakom v usloviyakh Krasnoĭ Armii. **[Prevention and control of tetanus in the Red Army.]**—*Veterinariya, Moscow.* No. 1. pp. 25–27. **2140**

S. recommends the wholesale compulsory immunization of horses against tetanus using 5 ml. of anti-tetanus aluminal anatoxin, a harmless preparation which does not interfere with any subsequent complement-fixation tests for glanders and gives immunity for over six years.

The extensive movement of horses under war conditions and the impossibility of branding those which had been immunized made the carrying out of such a measure by the Red Army difficult, and there was the possibility of a horse being inoculated more than once; accordingly, a working dose of 2·5 ml. is recommended, which will not give such a high degree of immunity as 5 ml. but which will be sufficient for all practical purposes.—E. CHERKESI.

CALLAHAN, W. P., Jr. (1944.) **Spontaneous histoplasmosis occurring in a dog.**—*Amer. J. trop. Med.* **24.** 363–366. [Author's summary and conclusions copied *verbatim*.] **2141**

The third instance of a generalized infection in a dog by *Histoplasma capsulatum* is reported. Material was not available for the cultivation or passage to other animals, but the morphologic characteristics and the reactions of the host are identical with previously described cases of this disease. The importance of the occurrence of the disease in an animal pet in an area in which a number of human cases have been reported is stressed. The possibility of the various methods of transmission from dog to man as postulated by De Monbreun [1939] is discussed. The majority of evidence suggests either the respiratory or the gastro-intestinal tracts as the portal of entry.

HOERLEIN, A. B. (1945.) **Studies on animal dermatomycoses.**—*Thesis, Cornell.* pp. 79. **2142**

The conditions dealt with under this title are those of the "ringworm" group as they occur in the central part of New York State. These infections are limited, for the most part, to the superficial layers of the skin and its keratinized structures. In animals both the epidermis and the hair are involved, the latter being the most important.

H. gives an extensive review of the literature, including the history, parasitic, cultural and saprophytic life of the dermatophytes, and discusses their classification.

The diagnostic methods used and discussed include the demonstration of the fungus in diseased tissue, fluorescence of the fungi under ultra-violet light, and cultural methods. An alkaline medium used instead of the acid medium generally recommended is described; it was especially valuable in the isolation of slow-growing dermatophytes in the presence of saprophytic moulds on the skin of animals.

In all of the cats and dogs that were infected, *Microsporon canis* was isolated. The dermatomycoses of cattle were all caused by *Trichophyton album*. Two dermatophytes, *Microsporon equinum* and *Trichophyton equinum*, were isolated from horses.

The 82 illustrations showing the disease in dogs, cats, cattle, and horses, and the causative agents are excellent.—H. L. GILMAN.

KLIENEBERGER-NOBEL, E. (1945.) **Changes in the nuclear structure of bacteria, particularly during spore formation.**—*J. Hyg., Camb.* **44.** 99–108. [Author's summary slightly amended.] **2143**

Changes of nuclear structure in bacteria have been studied by means of the hydrochloric acid-Giemsa method which produces brilliantly stained specimens

and can be carried out with almost the same ease as some of the ordinary routine staining techniques.

The nuclear changes in the four spore-bearing organisms studied are outlined. The dumbbell bodies which are dispersed in the cells of the young growth become aligned in the long axis of the cell where they eventually fuse into an axial nuclear cylinder. These cells divide up into fusion cells of approximately the same length. The development of the 'chromosome' stage into the fusion cell is the first step in the process of sporulation. During its further development the fusion cell or spore mother cell divides twice, with the result that it is segregated into four structures which often assume dumbbell shape. Therefore the chromatin cylinder of the individual spore mother cell seems to be equivalent to four nuclear elements one of which functions as the spore 'chromosome' ('nucleus'?), whereas the remaining three disintegrate. The ripe spore representing, as it does, the smallest cell unit contains one nuclear structure only.

Therefore the two main features in spore formation of bacteria appear to be (1) a fusion of the dumbbell bodies into an axial chromatin rod ('autogamy'?), (2) a reduction partition which is reminiscent of, though not corresponding to, the more complicated phenomenon of meiosis in the higher organisms. The sporulation, as outlined in this paper, gives new proof of the important part played by the chromatinic dumbbell bodies ('chromosomes') in the developmental cycle of spore-bearing organisms. The fusion cell with its axial chromatin cylinder has for the first time been proved to have a progressive functional significance as a stage in a nuclear cycle. The particular mode of fusion followed by reduction partition suggests that the chromatinic dumbbell bodies may be concerned with the transmission of the hereditary characters in bacteria.

See also absts. **2252** (streptococci), **2253** (mastitis), **2181-2184, 2208, 2219, 2254, 2255, 2277, 2284** (TB.), **2206** (rat leprosy), **2193** (*Erysipelothrix rhusiopathae* in sheep), **2274** (*Bact. coli*), **2201, 2202, 2221, 2279** (salmonella), **2292** (associated pasteurella and salmonella in pigs), **2185, 2186, 2256, 2292** (brucella), **2257** (gas gangrene), **2281** (tetanus), **2258** (*Fusiformis necrophorus*), **2247-2250, 2256, 2257, 2265** (antibacterial products).

DISEASES CAUSED BY PROTOZOAN PARASITES

DUKE, H. L. (1944.) **Rhodesian sleeping sickness. [Correspondence.]**—*Trans. R. Soc. trop. Med. Hyg.* **38.** 163–165. **2144**

The case against *Glossina pallidipes* being the main vector of *Trypanosoma rhodesiense* in recent outbreaks of sleeping sickness in Uganda is accepted and notes are given on the transmissibility of polymorphic trypanosomes by various species of tsetse. Cases of *T. rhodesiense* infection have been previously recorded in Uganda from the West Nile and from the neighbourhood of Kampala. In the latter case the patients were natives of Tanganyika Territory. Human beings vary in their resistance to infection and the resistance of an individual may vary with his general health. When heavy infections of the peripheral blood occur, direct transmission may become a factor in the spread of human trypanosomiasis.—U. F. RICHARDSON.

*TOBIA, A. (1942.) Ricerche morfologiche sul midollo osseo nella Castellanosi sperimentale. **[Morphology of bone marrow in infection of small animals with *Trypanosoma equiperdum*.]**—*Arch. ital. Sci. med. colon.* **23.** 68–78. [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*). **142.** 300.] **2145**

The bone marrow of g. pigs and rabbits infected with *T. equiperdum* was studied and was found to be generally free of trypanosomes. Macroscopically it was characterized by hyperaemia and microscopically by a diminution of fat and an increase of cells. A limited degree of erythroblastosis and megakaryocytosis takes place.—J. K. H. WILDE.

*NEGRI, R. (1941.) Comparsa ciclica di tripanolisine e tripanoagglutinine nel sangue di cavie tripanosomiate. **[Cyclical appearance of trypanolysins and trypanosome agglutinins in the blood of guinea pigs infected with trypanosomiasis.]**—*R. C. Ist. Sanit. pubbl., Roma.* **4.** 973–980. [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*). **142.** 300.] **2146**

N. shows that in the blood of g. pigs infected with trypanosomes, there is a cyclical appearance of trypanolysins and trypanosome agglutinins. Eventually the trypanosomes are dissolved out of the blood stream.

—J. K. H. WILDE.

COATNEY, G. R., COOPER, W. C., & MILES, V. I. (1945.) **Studies on *Plasmodium gallinaceum* Brumpt. I. The incidence and course of the infection in young chicks resulting from single mosquito bites.**—*Amer. J. Hyg.* **41.** 109–118. **2147**

COATNEY, G. R., COOPER, W. C., & TREMBLEY, H. L. (1945.) **Studies on *Plasmodium gallinaceum* Brumpt. II. The incidence and course of the infection in young chicks following the inoculation of infected salivary glands.**—*Ibid.* 119–122. **2148**

I. Data were collected on the infections that developed in 300 young chicks bitten by single mosquitoes infected with *P. gallinaceum*; these data are published as being important in the study of malarial chemotherapy. Little information is available concerning the course of sporozoite-induced infections in any of the avian malarias. The authors have shown that such variables as differences between the ages of birds, the methods of inoculation and the number of exposures, etc., definitely affect the incidence and the course of the disease in exposed birds.

II. The incidence of infection was found to be significantly higher in the birds which were injected with salivary glands than in the birds infected by exposure to single mosquito bites. The disadvantages of the method include tedious dissections and the impossibility of using true controls.—C. H. S.

WOLFSON, F. (1945.) **An experimental study of mixed infections with *Plasmodium cathemerium* and *Plasmodium lophurae* in ducks.**—*Amer. J. Hyg.* **41.** 123–135. **2149**

Studies of mixed infections in human malaria have shown that an antagonism exists between the human species of *Plasmodium*; little is known, however, of the behaviour of avian malarial parasites in mixed infections.

W. approached the problem in two ways, by the simultaneous inoculation of two species and the study of the resulting parasitaemia and anaemia, and by the isolation of each species from experimentally produced mixed infections and the testing of the isolated strains for purity by means of cross-immunity reactions. The study of parasitaemia in mixed infections and in controls inoculated with each species alone indicated that the numbers of parasites observed daily in mixed infections resemble the theoretical numbers which would be anticipated if the two species developed independently. There is no evidence of dependence between the two species in mixed infections. Mixed infections with *P. cathemerium* and *P. lophurae*, brought about by semi-weekly subinoculations and standard doses of parasites are likely to result in a pure infection

f *P. cathemerium*. W. concludes that after a proper djustment of doses, *P. cathemerium* and *P. lophurae* in ixed infections could be used for testing the effect of ntimalarial drugs upon both species in a single host. —C. HORTON SMITH.

URCHATOV, V. I., & ABUSALIMOV, N. S. (1940.) Epizootologiya i mery bor'by s gemosporidiozami ovets v usloviyakh Azerbaïdzhana. **[Epizoology and control measures for ovine piroplasmosis in Azerbaijan.]**—*Veterinariya, Moscow.* No. 3. pp. 31–36. [French summary.] **2150**

The haematozoan diseases of sheep, piroplasmosis, naplasmosis, and theileriasis, and their transmitter, ne tick *Rhipicephalus bursa*, are distributed densely in ow-lying districts at the foot of the mountains and lower ooded slopes and less densely in mountainous, semi-esert and steppe-zones; the high wooded zones and lpine meadow-lands are uninfested.

The authors recommend numerous prophylactic easures, two of which comprise a chain of arsenic aths *en route* from winter quarters to alpine grazing-nds, and the transportation of sheep in lorries to avoid nfection on intermediate pastures. The use of acri-avine is recommended as a prophylactic and as a emedy.—E. CHERKESI.

MARKOV, A. A., & KURCHATOV, V. I. (1940.) K metodike izucheniya epizootologii gemosporidiozov. **[A method for the study of the epizoology of piroplasmosis.]**—*Veterinariya, Moscow.* No. 3. pp. 23–30. [French summary.] **2151**

The authors describe a method for studying ne causal parasites of piroplasmosis, species of vector icks and their distribution and development, seasonal eriods of infection of animals and the role of the articular species of ticks in spreading the infection. hey propose zoning the surveyed regions into (a) the atent zone, where the indigenous animals seldom evelop the infection although most of them are carriers f the organisms, whereas without exception all animals nported from a safe zone develop it, (b) the epizootic one, where both indigenous and imported animals evelop the disease and where the vector ticks are resent and (c) the safe zone—where carriers and vectors f the organisms are absent and there are no cases of nfection.

Techniques are elaborated for the identification of ne carriers and transmitters, for the examination of omestic and wild animals and for the drawing up of aps on which the collected epizoological data are raphically recorded.—E. CHERKESI.

HORINE, V., GRABAR, P., TIXIER, R., & CROUGUE, O. (1943.) Ultrafiltration de *Spirochaeta hispanica*. Détermination des diamètres des formes visibles et des formes infravisibles. **[Determination of the diameters of visible and invisible forms of *S. hispanica*.]**—*Ann. Inst. Pasteur.* **69.** 162–170. **2152**

Blood from an animal in the afebrile stage of pirochaetosis is infective on inoculation although no rganisms are detectable in it microscopically. In an ttempt to compare the size of the ultravisible forms resent at this stage with the visible forms, dilutions of lood estimated to contain comparable numbers of the rganisms were filtered through graded collodion mem-ranes. The results indicated that the visible and isible organisms were about equal in diameter, 0–270 mμ. The failure to detect organisms in the febrile stage must be explained either by their scarcity, r by supposing that their invisibility is due to their eing much shorter than the typical forms, so that ey are mistaken for blood granules.—U. F. R.

*ZIRONI, A., & CARLINFANTI, E. (1941.) Ricerche su alcune proprietà delle leptospire e sui fattori che regolano il loro sviluppo in cultura. **[Some characters of leptospira and factors which influence their development in culture.]**—*Boll. Ist. sieroter. Milano.* **20.** 51–64. [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*). **142.** 219–220.] **2153**

Observation on the behaviour of leptospira exposed to chemical reagents or physical forces reveals their great tendency to lysis. The specific agglutinins which occur in the pseudoglobulin factor of sera produce lysis even in the absence of complement. This lytic phenomenon only occurs in the presence of an electrolyte and is bound up with the sensitiveness of the leptospira to salts; this sensitiveness is increased by antibody. Though leptospira regularly pass filters, they do not produce a luxurious growth in the filtrate. On solid media they do not produce visible colonies but spread over the surface. They multiply in fluid medium only if the inoculum is large in proportion to the volume of medium, or if inoculation is repeated.

From this it is concluded that an active agent, which is called bio-auxin, occurs in leptospiral cultures and exerts a trophic influence on the organisms. Leptospira can be cultured repeatedly in the same medium provided that adult organisms are removed by filtering. The cessation of multiplication is considered to be due to an inhibitory substance which appears after the maximum density of organisms has been reached, and disappears rapidly after the removal of the organisms. This development of a biostatic complex in the medium allows the organisms to survive in culture for long periods, as the control of multiplication prevents the rapid exhaustion of the medium.—U. F. RICHARDSON.

WINSSER, J. (1943.) Ueber eine Anzahl von Leptospirosefällen bei Hunden. **[Leptospirosis in dogs.]** —*Z. InfektKr. Haustiere.* **60.** 103–112. **2154**

Thirty cases of canine leptospirosis or suspected leptospirosis are described. The majority of cases were from *Leptospira canicola* infection and the history indicated that infection was acquired from swimming in ditches or drinking from them. This suggests either that this leptospira has considerable power of survival in water or that an unknown reservoir host exists.

The symptoms showed considerable variation and in some cases passed almost unnoticed. Some animals showed nervous symptoms and in one, loss of hair was the most prominent symptom. Injection of episcleral vessels occurred in most cases, but this may occur in other conditions. Vomiting was not constant.

A positive agglutination test cannot always be relied upon, as it may be residual from a previous infection and repeated tests are required to ascertain whether the titre is rising or falling. In early cases, moreover, a high non-specific agglutination may be given, the true specific agglutination only developing later. Antiserum treatment was not very successful, but this may be due to delay in seeking veterinary assistance. The serum is probably most valuable in the early stages when the leptospira are still in the blood.—U. F. R.

*WITTEBOLLE, P. (1942.) Contribution à l'étude d'une souche leptospirienne aberrante (Bangkinang). **[An aberrant strain of leptospira.]**—*Rev. belge Sci. méd.* **14.** 281–287. [Abst. from abst. in *Jber. Vet.-Med.* **71.** 131.] **2155**

A strain of leptospira belonging to the "Rachmat" group was isolated from blood in the Dutch East Indies, but whilst the intraperitoneal inoculation of g. pigs, even with a single organism, produced a fatal infection, oral administration gave negative results. The strain was non-pathogenic to white rats, white mice, hamsters and dogs.—U. F. RICHARDSON.

*NEGRI, R. (1941.) Ricerche sulla leptospiruria delle cavie artificialmente infettate con diversi ceppi di L.i.h. **[Artificial *Leptospira icterohaemorrhagiae* infection in guinea pigs.]**—*R. C. Ist. Sanit. pubbl., Roma.* **4.** 783. [Abst. from abst. in *Zbl. Bakt. I. (Ref.).* **142.** 218–219.] **2156**

N. records a study of the reaction of g. pigs to artificial infection with various strains of *L. icterohaemorrhagiae*.—U. F. RICHARDSON.

See also absts. **2188, 2261-2263** (trypanosomiasis), **2189, 2264** (equine piroplasmosis), **2265** (leptospirosis), **2293** (bovine trichomoniasis), **2187** (bovine coccidiosis and piroplasmosis).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

FRANK, A. H., APPLEBY, A., & SEIBOLD, H. R. (1945.) **Experimental intracerebral infection of horses, cattle, and sheep with the virus of vesicular stomatitis.** —*Amer. J. vet. Res.* **6.** 28–38. **2157**

In 1933, COX & OLITSKY [see *V. B.* **3.** 697] reported the establishment of neurotropic strains of vesicular stomatitis virus in g. pigs and white mice. These neurotropic strains have now been used for the intracerebral inoculation of horses, cattle and sheep. These animals proved to be susceptible, developing symptoms of fever, psychic disturbance, motor irritation and paralysis. Inoculation of the Indiana type virus was followed by recovery, whereas the New Jersey type virus was lethal. It is suggested that the New Jersey type strain was more virulent but that a quantitative difference also existed.

Histological examination of the brain in fatal cases showed a disseminated, nonpurulent encephalitis with foci of inflammatory and degenerative changes scattered through the cerebrum and the brain axis.—W. M. H.

SANDERS, E. F., & QUIN, A. H. (1944.) **Vesicular stomatitis in swine. Report of a naturally occurring outbreak: its differentiation from foot-and-mouth disease and vesicular exanthema.**—*N. Amer. Vet.* **25.** 413–418. **2158**

The authors report an outbreak of vesicular stomatitis among swill-fed swine. The diagnosis was confirmed by the experimental transmission of the disease to swine, cattle, horses and g. pigs. The isolated virus strain was later identified as being of the New Jersey type. A short review is given of some of the methods of differentiating between the viruses of vesicular stomatitis, vesicular exanthema of swine and F. & M. disease.—W. M. HENDERSON.

*RAMON, G., LEMÉTAYER, E., MINGUET, P., YEU, F., & RAMON, P. (1942.) De l'obtention, chez le cheval, soit au moyen du virus de la fièvre aphteuse possédant toute sa virulence, soit à l'aide de ce même virus rendu avirulent (anavirus), d'un sérum doué de propriétés neutralisantes et préventives à l'égard du virus aphteux. **[Antiserum against foot and mouth disease prepared in horses with virulent and avirulent virus.]**—*Bull. Acad. Méd. Paris.* **126.** 480–483. [Abst. from abst. in *Jber. Vet.-Med.* **71.** 126. **2159**

The authors report the use of horses which had previously been employed for the production of diphtheria and tetanus antiserum for the preparation of a F. & M. disease antiserum capable of virus neutralization and g. pig protection. [See also *V. B.* **14.** 7.] —W. M. HENDERSON.

NORTH, E. A., BROBEN, J. A., & MENGONI, A. H. (1944.) **The use of the chorio-allantois of the developing chick embryo in the diagnosis of smallpox.** —*Med. J. Aust.* May 13th. 437–438. **2160**

The virus of smallpox from crusts of a natural case can be cultivated in the chorio-allantois of the chick embryo, even after they have been stored below 0°C. for a year. It is suggested that this may be a more sensitive medium than the cornea of the rabbit. Variola and vaccinia viruses may be distinguished by the appearance of the lesions produced on the chorio-allantoic membrane.—D. FORSYTH STEWART.

ANDREEV, K. P. (1943.) Gripp loshadeĭ v sel'skoĭ mestnosti. **[Equine influenza under village conditions.]**—*Veterinariya, Moscow.* No. 1. pp. 27–28. **2161**

In the absence of all sanitary measures and veterinary regulations and of any restriction as to the movement of horses in the district, an outbreak of equine influenza was allowed to run its full course from March to June, 1942. It took a mild form, spreading over a zone of 20 km., with sporadic and unconnected local outbreaks; infection was not always reported but approximately 10–30% of the equines in the district were affected.

Clinical features included a temperature of 40°–41°C. for 3–5, sometimes 7 days, dejection, loss of appetite (especially on days of high temperature), conjunctivitis, accelerated action of the heart, and in some cases swelling of the dewlap, belly and scrotum or legs. Sometimes fever was the only symptom. Recovery generally followed 2–3 days after the temperature had fallen to normal; in some cases there were renewed attacks of fever, but they were of short duration. Other symptoms typical for influenza, *e.g.*, jaundice and indigestion, as well as local affections of the upper respiratory tracts, *e.g.*, rhinitis, pharyngitis and cough, were absent.

The condition was diagnosed as equine influenza in accordance with the nomenclature proposed by Kolyakov and Rozhnov.

Preventive sanitary and administrative measures are recommended.—E. CHERKESI.

PEARSON, H. E., & RENDTORFF, R. C. (1945.) **Studies of the distribution of poliomyelitis virus. I. In the environment of sporadic cases. II. In a small town.** —*Amer. J. Hyg.* **41.** 164–178 & 179–187. **2162**

PEARSON, H. E., BROWN, G. C., RENDTORFF, R. C., RIDENOUR, G. M., & FRANCIS, T., Jr. (1945.) **Studies of the distribution of poliomyelitis virus. III. In an urban area during an epidemic.**—*Ibid.* 188–210. **2163**

[Authors' summaries copied *verbatim*.]

I. Stool specimens from almost the entire population of a village where poliomyelitis occurred in an adult were tested for virus. Virus was recovered only from the 6-year-old son of the patient. Pools of specimens from 127 persons in 39 families were uniformly negative. Of 30 persons associated with a poliomyelitis patient in a small town, virus was recovered only from the stools of a sibling 5 years old, and from two playmates, 7 and 5 years old, of another family. No virus was detected in the stools of the associates of two patients on farms nor of two patients in a small town. Virus was not recovered from fecal specimens from farm animals nor from flies, mosquitoes nor the brains and intestines of rats or mice from the environment of these sporadic cases.

II. After the occurrence of two cases of poliomyelitis in a small town, stool-samples from nearly all the children under 16 years of age were tested for the presence of virus. Members of the families of the patients also were tested. Of 282 persons in 146 families, virus was recovered from the brother and a group of 3 cousins of one patient and from children of 8 other families; 5 of these children were 2 years of

age. From the degree of association of those found to harbor the virus it was concluded that personal association was the principal factor involved in the spread of infection within the community.

III. During the 1943 epidemic of poliomyelitis in Fort Worth, an intensive study of the distribution of virus was made in a selected district of the city. Stools from 524 persons were tested for virus by inoculation into monkeys. Six (75 per cent) of 8 households, representing 27 familial contacts, were positive for virus, as were 8 (18 per cent) of 45 households containing 80 non-familial contacts and two (1·6 per cent) of 127 households representing 374 non-contacts. Virus was harbored by adults in 5 of the 6 positive households of familial contacts. Virus was not recovered from specimens of water, sewage, flies, ants, cockroaches or droppings of domestic animals.

An agent that produced paralysis in mice and cotton rats was obtained from a pool of brains and intestines from 22 Norwegian rats from the city dump. No virus was recovered from several batches of mice and rats collected in various other parts of the city.

STEIN, C. D., & MOTT, L. O. (1944.) **Susceptibility of animals other than solipeds to infectious anemia.** —*Vet. Med.* **39.** 408–413. **2164**

Calves, lambs, normal and splenectomized pigs, dogs, kittens, white mice, white rats, rabbits, normal and splenectomized g. pigs and pigeons were injected subcutaneously with virulent filtered serum obtained from a horse infected with a highly virulent strain of infectious anaemia, the same strain as used in earlier work [see *V. B.* **12.** 580]. A few animals developed febrile reactions but showed no other abnormality except in the case of normal and splenectomized g. pigs, some of which lost weight and died. None developed the clinical syndrome; P.M. examination failed to reveal lesions and horse inoculation tests were negative.

The authors concluded that no multiplication of the virus had occurred in these animals and that none was suitable for diagnostic tests or experimental work with equine infectious anaemia.—W. M. HENDERSON.

I. GILLAIN, J. (1944.) Le virus peste bovine adapte sur chèvre saponine ou virus vaccin saponine. **[Saponized goat virus rinderpest vaccine.]** pp. 6. Leopoldville, Congo Belge: Govt. General Service Véterinaire. fcp. Mimeographed. **2165**

II. GILLAIN, J. (1944.) Immunité congénitale et virus peste bovine adapte sur chèvre. **[Calf immunity in the progeny of cows immunized with goat virus.]** pp. 3. Leopoldville, Congo Belge: Govt. General Service Véterinaire. fcp. Mimeographed. **2166**

III. GILLAIN, J. (1945.) A propos de l'immunité congénitale due au virus peste bovine adapte sur chèvre. **[A comparison of the resistance to rinderpest of calves born to susceptible cows and of those born to cows immunized by goat virus.]** pp. 3. Leopoldville, Congo Belge: Govt. General Service Véterinaire. fcp. Mimeographed. **2167**

I. G. discusses briefly the variations in mortality occurring after the use of goat-adapted virus in India, Kenya, Uganda and Tanganyika. The Kabete strain of goat virus was tested in 1943 on 1,678 cattle at Nioka. Practically 100% reacted, with an average mortality of 5·12%. The mortality varied from nil to 26·66% in different herds. Heavy mortality could be prevented by the simultaneous injection of small doses of serum or by the use beforehand of formolized vaccine. The difficulties arising in the field when using these methods are described. Although undue mortality following the use of goat virus could be prevented by either of these two methods, neither was considered satisfactory for mass immunization as a variable percentage the of cattle failed to develop a satisfactory immunity. G. points out that it has not yet been proved that cattle reacting to goat virus are incapable of spreading infection to susceptible contacts.

CURASSON (1937) claimed good results in laboratory trials with emulsions of virulent tissue pulp treated with saponin. Field trials, however, gave unsatisfactory results. G. made trials at Nioka with spleen pulp from animals [it is not clear whether goats or cattle were used] which reacted to goat virus. Both fresh and dried pulp was used, one part of saponin being added to 100 parts of emulsion. Sixteen cattle which had been vaccinated with saponized goat virus were tested for immunity at intervals of 21–37 days; all proved to be susceptible. Two cattle vaccinated with spleen pulp to which saponin had not been added proved to be immune. All the cattle vaccinated with saponized goat virus showed a short thermal reaction lasting 1–4 days.

There were six deaths in 112 cattle following vaccination with ordinary goat virus spleen pulp but there were no deaths in 50 vaccinated with saponized goat virus pulp.

II. G. discusses very briefly the nature of the strong but transient immunity shown by calves born to cows immune to rinderpest either as a result of recovery from a natural attack or of immunization by the serum-virus method. He carried out experiments on 38 calves, the progeny of cows which had been immunized by goat virus. Three of the calves were separated from their dams at birth, 12 had been weaned and 24 were still sucking at the time of the test inoculation.

Two out of the three calves separated from the dams at birth proved to be immune when tested at about two months of age. The third was tested when seven months old and proved to be susceptible. G. concludes that immunity is not the result of ingestion of antibodies in the mother's milk. One calf whose dam had been vaccinated ten days before the calf was born had no immunity. G. considers that the explanation is that the dam had not had sufficient time to develop immunity and so could not pass immunity to her calf. The immunity of calves conceived after their dams had been immunized was as strong as that of those from dams vaccinated while pregnant. Calf immunity disappears in weaned calves at the age of seven months. These experiments were made in an area where rinderpest had been absent since 1889.

G. advises against the vaccination of sucking calves, the progeny of immune cows. Such calves should be vaccinated at 8–12 months of age and revaccinated one year later.

III. Daubney had discussed the experiments made by G. in II and suggested that calf immunity was as much or possibly more due to age resistance as to immunity transmitted from the dam. He considered it possible that calves born to completely susceptible mothers would give exactly similar results and advised that an experiment be carried out by G. to establish whether the phenomenon was one of age resistance or of inherited immunity.

Accordingly 25 calves, of which 17 were born to susceptible cows and 8 to cows which had been immunized by goat virus, were tested at intervals varying from one day to seven months after birth. All the calves from susceptible mothers proved to be susceptible and all those born from immune mothers were immune. Calf immunity is not a resistance due to age but a congenital immunity acquired from the dam.—M. C.

SMADEL, J. E., JACKSON, E. B., & HARMAN, J. W. (1945.) **A new virus disease of pigeons. I. Recovery of the virus.**—*J. exp. Med.* **81.** 385–398. **2168**

The investigation of an epizootic disease among United States Army pigeons led to the isolation of psittacosis virus and a virus with no apparent immunological relationship to psittacosis virus. The lesions in all the affected birds were similar, consisting of degenerative and inflammatory changes in the viscera with one significant difference, *viz*, the cells of the involved tissues of certain birds contained intranuclear inclusions; it was from these birds that the new virus, tentatively called an intranuclear inclusion (I.N.I.) agent, was isolated. This I.N.I. agent is pathogenic for pigeons and embryonated eggs but is avirulent for rabbits, g. pigs and mice. Preliminary filtration and centrifugation experiments suggest that it is smaller than psittacosis virus. In mixtures of the two viruses, the I.N.I. agent can be freed from psittacosis virus by filtration of the mixture through a Berkefeld V filter and rapid passage on the chorio-allantoic membrane, on which the new agent multiplies more readily than psittacosis virus, producing large yellowish-grey pocks characterized by the presence of intranuclear inclusions. The authors assume that the unusual outbreak of psittacosis among New York pigeons reported by SMADEL *et al.* [see *V. B.* **14.** 157] in which intranuclear inclusions were observed was due to simultaneous infection with the two viruses.
—W. M. HENDERSON.

COLES, J. D. W. A. (1944.) **Psittacosis in a parrot and in domestic pigeons. Case reports.**—*J. S. Afr. vet. med. Ass.* **15.** 104–105. **2169**

A case is described of psittacosis in a parrot in Johannesburg. The bird developed diarrhoea and at an examination carried out P.M. at the Onderstepoort laboratory very severe fibrinous perihepatitis and pericarditis were seen. The spleen was three times the normal size and very numerous Leventhal-Coles-Lillie bodies were found in smears from the liver surface and pericardium. The human contacts remained well.

Psittacosis was diagnosed in pigeons sent from Beaufort West in the Cape Province and from lung smears from a dead bird. In two recovered birds sent for examination, smears from the lungs were negative, but white mice were infected from emulsions of internal organs. The virus appeared to be of a typical pigeon strain as seen in England and North America.—E. M. R.

JONES, T. C., & MAURER, F. D. (1944.) **Attempts to produce jaundice in horses by inoculation of yellow fever vaccine.**—*Bull. U.S. Army med. Dep.* No. 76. pp. 115–120. **2170**

Yellow fever vaccine from batches which had proved icterogenic in man was injected subcutaneously into 40 horses, while yellow fever vaccine not associated with the production of human jaundice was injected into a further 10 horses. Two horses were injected with plasma which was believed to be icterogenic from patients convalescing from mumps and two others were injected with desiccated convalescent serum from a patient in whom jaundice was believed to have resulted from injection of infected plasma. In all but one case the results, as determined by clinical observation, icterus index, red and white blood cell counts and the attempted passage of any factor in the blood by intracerebral inoculation into mice, were held to exclude completely any evidence of the transmission of an icterogenic factor to the horses. In a single animal injected with yellow fever vaccine, a mild jaundice developed on the fifth day, together with pyrexia (104·6°F.), moderate depression, accelerated respirations and anorexia. The icterus index was 20·7 on the sixth day, 22·7 on the seventh day, 18·1 on the eighth day and under 16 on the ninth day; on the 29th day it again rose to 22·2 and this subclinical jaundice persisted for 11 days. No further symptoms were observed and the jaundice could not be transmitted. It is suggested that the symptoms in this animal were probably due to a concomitant infection and that they were not associated with the inoculation of yellow fever vaccine.—A. N. WORDEN.

OLIPHANT, J. W. (1944.) **Jaundice following administration of human serum.**—*Bull. N.Y. Acad. Med.* **20.** 429–445. **2171**

In an historical introduction, reference is made to the observations of HIRSCH, 1883 [*Handbook of Geographical and Historical Pathology*, translated from the 2nd German edit. by C. CREIGHTON. London: New Sydenham Society, Vol. 3] who recorded an outbreak of jaundice in 191 [14·8%] of 1,289 persons vaccinated with "humanized lymph in glycerine". Data are given relating to the transmission experiments with human volunteers, made in connexion with the 1942 outbreak of post-vaccination jaundice in the Virgin Islands [see *V. B.* **14.** 131]. These experiments have resulted in the production of jaundice by the inoculation of two lots of yellow fever vaccine containing human serum, by the inoculation of small quantities of filtered serum from each of three individuals and of a serum pool from nine individuals, all of whom had previously received the icterogenic vaccine, and by the inoculation of serum from an individual who had early developed spontaneous jaundice. Two sera which proved icterogenic when inoculated subcutaneously did not produce jaundice when instilled intranasally. There was no apparent difference in the susceptibility of the sexes to this type of jaundice, while cases were established in all four of the Moss blood groups and in both Rh-positive and Rh-negative persons. The icterogenic agent was found to be filtrable and to survive drying *in vacuo*, storage for long periods in serum at 4°C. and heating at 56°C. for half-an-hour in the dried state; it was demonstrated in the blood during the pre-icteric period but not two-and-a-half months after the disappearance of the jaundice; it was apparently inactivated by short exposures to ultraviolet irradiation. Attempts to demonstrate virus particles in icterogenic sera by electron microscopy were unsuccessful.
—A. N. WORDEN.

GOWEN, G. H. (1945.) **The epidemiology of epidemic hepatitis.**—*Bull. U.S. Army med. Dep.* No. 84. pp. 41–50. **2172**

G. reports on an outbreak of epidemic hepatitis, involving some 400 cases, in Tunisia during the five months ending January, 1944.

The incubation period was 7–38 days. The pathological picture was essentially that of a diffuse process accompanied by liver-cell necrosis, leucocytic and histiocytic reaction, and infiltration. The ratio of cases without jaundice to cases with jaundice appeared to be of the order of 8 : 1 and the spread of the disease was attributed to sub-icteric and inapparent cases. The clinical picture was as described elsewhere.—A. N. W.

MARIANI, G., & DEDIÉ, K. (1943.) Ueber das Vorkommen der Rickettsia conjunctivae in Libyen. [*Rickettsia conjunctivae* **infection in Libya.**]—*Z. InfektKr. Haustiere.* **60.** 143–150. **2173**

Elementary or initial rickettsial bodies were demonstrated in 50% of smears from the conjunctiva of lambs and kids in Libya and were similar to those described by COLES [see *V. B.* **6.** 122] and DONATIEN & LESTOQUARD [see *V. B.* **9.** 386], but no conjunctivitis was associated with them nor did the local inhabitants admit the occurrence of an epidemic of conjunctivitis.

It is claimed that with careful examination the elementary bodies may be seen as small rings, and that they appear to be heaped on the cells rather than intracellular.—U. F. RICHARDSON.

*CARPANO, M. (1942.) La rickettsiosi congiuntivale dei ruminanti. Ricerche sulla morfologia della "Rickettsia conjunctivae Coles, 1931", in rapporto, specialemente, con la "Rickettsia trachomae Busacca, 1935". [*R. conjunctivae* and *R. trachomae* infection.] —*Riv. milit. Med. vet., Roma.* **5.** 98–101. [Abst. from abst. in *Dtsch. tropenmed. Z.* **47.** 127.] **2174**

The morphological and biological differences between the causal organisms of human trachoma and infectious conjunctivitis of ruminants are explained and the presence of the latter condition in goats and sheep in Albania is recorded. Successful transmission from sheep to goats and back to sheep was obtained. A detailed description of the symptoms encountered is given.—U. F. RICHARDSON.

See also abst. **2281** (F. & M. disease), **2290** (equine infectious anaemia), **2292** (swine fever diagnosis).

IMMUNITY

BARR, M., & GLENNY, A. T. (1946.) **Some practical applications of immunological principles.**—*J. Hyg., Camb.* **44.** 135–142. [Authors' summary copied *verbatim*.] **2175**

General immunological principles appear to be of wide if not universal application, and can be applied equally to the hyperimmunization of horses for the production of therapeutic sera, or to human immunization against diphtheria and tetanus. A wider knowledge of the results obtained in animals, chiefly guinea-pigs, rabbits and horses, can help in a better understanding of all that is involved in the immunization of children against diphtheria.

The response of an animal to an antigenic stimulus depends almost entirely on its previous experience of that antigen. If it has had no previous experience, antibody is produced slowly and in small amounts. If it has had previous experience, a change occurs in its antibody-producing mechanism which enables it on further stimulation to produce antibody more rapidly and in larger amounts. To produce this effect the early experience must be adequate and followed by a sufficient period of rest. It is shown that the normal antitoxic values of animals can give considerable information on their previous experience of antigen; that this information can be made use of in the hyperimmunization of horses; and that inadequate primary stimuli and failure to provide adequate rest may lead to the production of antitoxins of low value and poor quality.

Two things are necessary for defence against toxins: circulating antitoxin and a high reactivity of the antibody-producing mechanism (potential immunity). Methods of immunization should be chosen so as to provide both these essentials.

EHRICH, W. E., & HARRIS, T. N. (1945.) **The site of antibody formation.**—*Science.* **101.** 28–31. **2176**

The authors review the problem of antibody formation and give an account of recent observations demonstrating the importance of lymphocytes and lymphatic tissue in their production. [See also MCMASTER *et al.*—*V. B.* **5.** 831, and EHRICH *et al.*—*V.B.* **13.** 171.]—M. L. LEVI.

BOIVIN, A., & DELAUNAY, A. (1942.) Sur l'action proinfectieuse des antigènes glucidolipidiques. [**Proinfective action of glycolipoid antigens.**]—*C. R. Soc. Biol., Paris.* **136.** 704. **2177**

Mice and g. pigs intoxicated with sublethal doses of somatic antigens succumbed to doses of virulent organisms 10–100 times smaller than those withstood by controls.—M. L. LEVI.

WORMALL, A. (1944.) **Non-antigenicity of gelatin. [Correspondence.]**—*Nature, Lond.* **154.** 332. **2178**

This letter, inspired by an article published by HAUROWITZ *et al.* (1943) and by the use of isinglass for blood transfusion suggested by TAYLOR, 1943, offers a critical discussion of the problem of the *in vivo* immunological inertness of gelatin. Published evidence is cited indicating that deficiency of aromatic and carbohydrate groupings is not solely responsible for non-antigenicity, and it is pointed out that the rapid urinary excretion which follows the intravenous injection of gelatin (the reason adduced by HAUROWITZ *et al.* for lack of full antigenicity) is probably not the only factor, since proteins such as egg albumin and Bence-Jones protein, which are excreted by the kidney, are nevertheless fully antigenic. W. also discusses a further explanation, *viz*, that the usual method of gelatin preparation by prolonged treatment with boiling water or steam destroys antigenicity, and points out that this explanation cannot be excluded since conclusive evidence as to the antigenicity or non-antigenicity of collagen is not available.

W. concludes by suggesting that information relating to the antigenicity of collagen is required not only in relation to the gelatin problem but also in relation to the larger general problem of protein antigenicity.

[Isinglass is generally regarded as a collagen rather than a gelatin.]—J. LOCHIEL MCGIRR.

MORGAN, W. T. J. (1944.) **The chemical nature of bacterial antigens.**—*Brit. med. Bull.* **2.** 281–284. **2179**

Recent advances are paving the way to the preparation of bacterial carbohydrate complexes in a form free from non-specific substances and therefore more suitable for prophylactic immunization than are crude bacterial suspensions. As a further step it may be possible to synthesize by the methods of organic chemistry haptene molecules of a relatively simple composition which, combined with a suitable protein component, might stimulate the formation of immune bodies.—R. E. GLOVER.

MACHEBOEUF, M., VISCONTINI, M., & RAYNAUD, M. (1943.) Recherches sur la stabilité des liaisons entre agglutinines et bactéries. Essais infructueux de dissociation des complexes antigènes-anticorps par des solutions d'aminoacides. [**The stability of the liaison between agglutinins and bacteria. Unsuccessful attempts to dissociate the antigen-antibody complex with solutions of amino-acids.**]—*Ann. Inst. Pasteur.* **69.** 376–378. **2180**

The authors postulate the theory that antibody may be displaced from the antigen-antibody complex by the addition of excess amino acids, the latter displacing the antibody by mass action. This depends on whether the chemical activity of the antibody globulin is due to its constituent amino acids, or to the protein as a whole. The amino acids treated were:– glycocoll, alanine, lysine, leucine, isoleucine, arginine, valine, tyrosine, phenylalanine, histidine, tryptophane, oxyproline, aspartic acid and glutamic acid. These amino acids, in 2 : 1,000 solution (where the solubility was too low, a saturated solution was made and the undissolved crystals left in the tube), were incubated at 37°C. for 24 hours with agglutinated, washed paratyphoid organisms. One-half of the mixture was tested by the addition of 0·7% saline to see whether the

organisms were still sensitive. The organisms agglutinated immediately. The second half, after centrifugation to remove the organisms and dialysis to remove the amino-acids, was tested for free agglutinins, with negative results. Thus the antigen-antibody complex had not been split by the amino acids in pure solution. —R. M. LOOSMORE.

BROWN, E. (1944.) **The tuberculin test.**—*Vet. Rec.* **56.** 395–398. Discussion p. 398. **2181**

B. discusses the relative merits of the subcutaneous and double intradermal methods and enumerates possible factors complicating the reaction to mammalian tuberculin, such as infection with avian type tubercle bacilli, *Mycobacterium johnei*, saprophytic acid-fast bacilli, *Actinobacillus lignieresi*, *Brucella abortus* and even parasitic worm larvae. The importance of the injection site is stressed and the possibility of a delayed reaction to avian tuberculin should not be overlooked. B. does not think the comparative test should be applied to single animals with unknown herd histories. He criticizes the prevalent view that the size of a reaction to tuberculin is less important than the nature of the swelling and believes the latter to be of importance only when reaction size is small.

Points arising in the discussion were the degree of importance of sensitivity to avian tuberculin in an animal infected with bovine TB. and the importance of dosage, it being suggested that the difference in reaction to a 0·1 ml. and a 0·05 ml. dose would be negligible.—ALEX. B. PATERSON.

CABASSO, V., & ROUSSEL, H. (1942.) Emploi de l'huile de paraffine pour le diagnostic de la tuberculose sur le cobaye. [**Use of liquid paraffin for the diagnosis of tuberculosis in guinea pigs.**]—*Arch. Inst. Pasteur Tunis.* **31.** 31–43. **2182**

Experimental data are presented indicating that in g. pigs the lesions produced by the subcutaneous or intratesticular inoculation of tubercle bacilli in liquid paraffin are more extensive and more quickly produced than are those resulting from the inoculation of bacilli in saline suspension. Claims are made that when a liquid paraffin suspension and the intratesticular route of inoculation are used diagnostic results with ordinary pathological material may be obtained by killing test animals in 20–30 days. It is also claimed that by the use of liquid paraffin positive results may be obtained in certain instances in which the usual saline-suspension inoculations have proved negative.—J. LOCHIEL MCGIRR.

MURPHY, J. M. (1944.) **Tuberculin testing in cattle. Demonstration in Dublin.**—*Vet. Rec.* **56.** 399–401. **2183**

M. gives a brief account of the history of tuberculins and of the relative merits of the British and American methods of conducting the tuberculin test. A practical demonstration of both techniques was given. —A. B. PATERSON.

CORPER, H. J., & COHN, M. L. (1945.) **Passive transfer of specific tuberculo-immunity and specific tuberculin allergy.**—*Amer. Rev. Tuberc.* **51.** 312–314. [Spanish summary.] [Authors' English summary and conclusions copied *verbatim*.] **2184**

Specific tuberculosis immunity produced by means of the injection of viable avirulent human tubercle bacilli is not transferred perceptibly to normal recipient guinea pigs by the injection of citrated whole blood from the donors one month and two months after vaccination, when the specific immunity is well developed. Likewise, specific allergic hypersensitiveness to tuberculin is not transferred by means of the intravenous injection of citrated whole blood from the allergic hypersensitive donors to normal recipient guinea pigs.

BESSONOV, D. K. (1943.) Immunologicheskie reaktsii pri brutsellëze u krupnovo rogatovo skota i ikh epizootologicheskaya otsenka. [**Immunological reactions in bovine brucellosis and their control value.**] —*Veterinariya, Moscow.* No. 1. pp. 13–17. **2185**

The agglutination test is not an entirely satisfactory method for the diagnosis of bovine brucellosis because it is positive only in the initial stages of the infection and for a limited period afterwards. Comparatively little is known about the complement-fixation and allergic reactions. The present experiment was designed to determine the interval before reaction to these tests was apparent the effect of duration of the infection and the degree of infectiousness. The agglutination test was used for comparison.

The complement fixation reaction is obtained 15–45 days after the appearance of agglutinins in the blood, the allergic reaction in 30–75 days. They disappear in the order of their appearance, but occasionally the allergic reaction persists. In the initial stages the agglutination reaction is positive in 4% of cases, the complement fixation in 2·8% and the allergic in 1·8%. When the infection is 3–5 years old the agglutination reaction is positive in 7·7% of cases, the complement fixation in 15·6%, and the allergic in 77·1%.

Clinical and bacteriological data were obtained from selected groups: the 1st group comprised reactors to the agglutination test and served as controls, the 2nd group comprised reactors to the complement fixation and allergic tests and the 3rd group active reactors to the allergic test only. In the 1st group there were 11 abortions out of a total of 33 calvings; of the 9 foetuses examined 6 gave a culture of *Brucella abortus*. In the 2nd group there were 2 abortions out of 37; both gave a culture of *Br. abortus*. There were no abortions in the 3rd group. 24·3% of samples of milk taken from 78 cows in the 1st group were infected. 1·9% of the samples of milk taken from 49 cows in the 2nd group were infected. Samples of milk taken from the 3rd group were free of infection.

Reactors to the complement-fixation test are not only carriers, but an active source of infection. The "allergic" animals are considered as non-infective and contact with them is safe. In naturally-contracted brucellosis the agglutination reaction may appear again within six months of its disappearance; the complement fixation reaction persists for 10 months after the agglutination reaction has become permanently negative. —E. CHERKESI.

LEGROW, W. R. (1945.) **The relation of the opsonic index to brucella infection and immunity in cattle.** —*Thesis, Cornell.* pp. 73. **2186**

An intensive study was made of the opsonic index in 44 cattle to determine if possible its relation to the process of immunity to *Brucella abortus* infection. The animals had been under observation for a period of years. During that period, monthly agglutination tests had been made, together with g. pig inoculations to demonstrate the presence of *Br. abortus* in the milk and genital discharges at the time of each calving or abortion. Some of the animals had been vaccinated with strain 19 as calves; others were left as controls. All had been pastured for varying periods of time with positively reacting and aborting animals. Sufficient numbers of animals were included to give representative groups, classified as susceptible, infected, or immune.

The author gives a complete and detailed account of the technique used. Strict cleanliness of all apparatus is essential and blood should be drawn in wax lined tubes. The stain of McCullough and Dick was used.

Previous workers have stated that the opsonic test, when properly conducted, serves not only as a means

of detecting immune animals, but also of determining the degree of immunity. Animals that show a high opsonic index or marked phagocytosis have been considered immune, whereas animals showing a negative or low index have been considered susceptible.

This study shows that the blood of infected cows possesses a high opsonic index in the majority of cases. Thus, the effectiveness of opsonin in producing immunity to brucellosis may have been overestimated. This work raises the question whether opsonin is the only, or even the chief, factor concerned in producing immunity.

The blood of chronic reactors to the aggln. test, which have been demonstrated to be spreaders of brucella organisms, usually shows a high opsonic index. The blood of cows that have been held for years under exposure without contracting the disease sometimes shows a very low opsonic index, indicating that there is effective resistance that is not based on the release of opsonin in the blood.

The opsonic index is not a reliable single criterion on which to base that expectation cattle will be immune to brucellosis.—H. L. GILMAN.

See also absts. **2110** (streptococcal haemolysin), **2128** (listeria antigens), **2138** (lamb dysentery antiserum), **2146** (trypanolysin and trypano-agglutinin), **2159** (foot and mouth disease antiserum), **2165-2167** (rinderpest vaccine), **2170, 2171** (serum jaundice), **2217** (chemotaxis of bacterial nucleoproteins), **2219** (cold-susceptible serum globulins).

PARASITES IN RELATION TO DISEASE [GENERAL]

—. (1945.) **Report on diseases of farm livestock [Survey Committee, N.V.M.A.]. Section III : Parasitic diseases of bovines.**—*Vet. Rec.* **57.** 57–65, 73–79, 85–90 & 91. [For section II, see abst. **2193.**] **2187**

This report constitutes an excellent review of present knowledge of the most important parasitic diseases affecting cattle in Great Britain. It is divided into three parts, of which the first deals with helminthiases, the causes, symptoms, methods of diagnosis, epidemiology, and treatment of parasitic gastritis, parasitic bronchitis, and fascioliasis being discussed. In the section dealing with protozoan diseases, coccidiosis and babesiasis are described, and in the final section on diseases caused by arthropods, accounts are given of louse infestations, warble fly infestation, scabies, and tick infestations of bovines. The report concludes with a table giving a comprehensive summary.—T. E. G.

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

KLUGE, E. B. (1944.) **Nagana in Zululand.**—*Fmg S. Afr.* **19.** 437–443. **2188**

This is a popular article on nagana for farmers in districts where the disease occurs. Only three species of tsetse fly are found in Zululand : *Glossina pallidipes* in the Nmfolozi Game Reserve, *G. brevipalpis* and *G. pallidipes* in the Hluhluwe Reserve, and *G. pallidipes* and *G. austeni* in the Mkuzi Reserve. Trapping tsetse flies by means of the Harris trap was successful in the dry years when it was first in use and the flies were reduced to a low level, but in the subsequent wet years they increased again in spite of trapping. Only complete eradication of game would result in the disappearance of the fly but bush clearing and grass burning are valuable factors. The use of tartar emetic and antimosan is recommended for the treatment of individual cases. —E. M. ROBINSON.

MARKOV, A. A., KURCHATOV, V. I., & DZASOKHOV, G. S. (1940.) Rol' kleshcha Rhipicephalus bursa C et F v rasprostranenii núttallioza loshadeĭ. **[Role of *Rhipicephalus bursa* in the spread of equine babesiasis.]** —*Veterinariya, Moscow.* No. 3. pp. 37–39. [French summary.] **2189**

Babesia equi is transmitted in different regions of the U.S.S.R. by the following ticks of the family Ixodidae : *Dermacentor marginatus* (*reticulatus*), *D. silvarum*, *D. nuttallii*, *Hyalomma marginatum* and *Rhipicephalus turanicus*.

Observations carried out in the Crimea on the distribution and parasitism of *R. bursa* in various stages of development on specific hosts and on the distribution and seasonal incidence of *B. equi* allowed a theoretical assumption to be made that *R. bursa* was a transmitter of babesiasis. This was established experimentally with *R. bursa* collected from cows in the Bakhchiserai region of the Crimea, a zone suspected of babesiasis. The ticks were transferred to a foal free of the infection and engorged female ticks were removed on the 8th–9th day. The first attack of fever and the first appearance of *B. equi* in the blood occurred on the 21st day and the foal contracted babesiasis.—E. CHERKESI.

See also absts. **2144** (tsetse), **2150, 2151** (ticks), **2266-2270** (insecticides), **2287** (warble flies on reindeer), **2187** (arthropod parasites of cattle).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

QUINLAN, J. B., & STEYN, H. P. (1944.) **Onchocerciasis of the penis in a thoroughbred stallion.**—*J. S. Afr. vet. med. Ass.* **15.** 106–107. **2190**

A new growth close to the urethral opening was observed in a stallion 18 years old, and was removed under general anaesthesia. It was greyish white at its periphery and was smooth and firm ; the centre was uneven, reddish and granulating and bled easily. The growth appeared to be localized and caused some constriction of the urethral opening. On histo-pathological examination the tumour proved to be due to *Onchocerca* infection. The parasites were surrounded by tissue heavily infiltrated with eosinophiles.—E. M. ROBINSON.

See also abst. **2187** (helminths of cattle).

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

NETTLESHIP, A. (1945.) **Influence of age on the growth of lymphomas.**—*Amer. J. Path.* **21.** 147–165. [Author's summary copied *verbatim*.] **2191**

Four transplantable lymphomas were studied in animals [mice, rats] of different ages. With regard to local lymphomas, the gain in weight during tumor growth was accounted for in the young animals by gain in the normal tissues (one-half), and also in the tumor. In older animals the gain in weight could be accounted for only by the amount of neoplastic tissue grown (the

animal's tissues lost weight). In one instance the average tumor weight of the older age group was greater, in another instance slightly less, than that of the younger age group.

It was demonstrated with the malignant thymoma that these neoplasms increased in mass one-half as rapidly in young animals as did normal young growing tissues. All of the local tumors differed from normal tissues in their ability to continue this growth unchanged beyond the slowing down of normal tissues.

No significant difference in mortality could be demonstrated in animals of different age groups when inoculated with a generalized lymphoma.

NETTLESHIP, A. (1945.) **Growth of a mouse lymphoma compared to normal tissue growth.**—*Amer. J. Path.* **21.** 167–169. [Author's summary copied *verbatim.*] **2192**

Young mice which grew transplantable lymphomas accumulated approximately the same amount of tissue as their litter-mate controls, and the rate of accumulation was similar. One-half of the total gain in weight in the tumor-bearing animals was in the tumor. Older animals which bore tumors grew more tissue than their litter-mate controls. Their tumor weights could account for almost all of their weight increase.

Even in young animals, the total neoplastic mass accumulated was never greater in any time period than that grown by heterogeneous tissues in litter-mate controls. The actual growth of the protoplasm in this lymphoma appears to be approximately one-half that of heterogeneous normal tissues.

See also abst. **2243** (thyroid adenomata from brassica-seed diet).

DISEASES, GENERAL

—. (1944.) **Report on diseases of farm livestock [Survey Committee, N.V.M.A.]. Section II. Diseases of sheep.**—*Publ. nat. vet. med. Ass. Gt Brit.* No. 6. pp. 101. [For section I see *V. B.* **11.** 703.] **2193**

The diseases of sheep in Great Britain are reviewed and knowledge as to their causation, prevention and cure is brought up-to-date.

The diseases are dealt with under six headings. In the section dealing with bacterial diseases a clear account is given of the enterotoxaemic and other conditions caused by anaerobes. The account of *Erysipelothrix rhusiopathiae* infection in sheep is of special interest. Virus and rickettsial diseases are well described, as are those due to helminths and ectoparasites. The importance of deficiencies of minerals and trace elements as causes of previously obscure disorders has been emphasized in recent years by workers in many parts of the world and the distribution of such disorders in Great Britain, their symptoms and methods of prevention are adequately dealt with.

Not the least interesting and stimulating portion of this little book is the introduction. Here the varying distribution of diseases as regards the ages of the affected sheep, season of the year and nature of the grazing is correlated with the complex and colourful pattern of British methods of sheep husbandry; these methods are the result of adaptations over a long period of time to widely varying conditions of climate, elevation and soil types.—M. C.

CLARK, R. (1944.) **The role of an adequate water supply in the prevention of ruminal impaction in cattle.**—*J. S. Afr. vet. med. Ass.* **15.** 113–119. **2194**

Impaction of the rumen, known as "dry gall-sickness", is very common in cattle in South Africa during the dry winter months and is associated with the presence in the rumen of dry grass with a high cellulose and lignin content.

C. describes the anatomy and physiology of the ruminant stomachs and discusses the biochemical changes which occur in the rumen, including the unfavourable reaction on the bacterial flora of the organ which a poor diet may produce. The part played by moisture in the rumen is considered to be very important and under winter conditions this will be low unless supplementary succulent feeds are given. Very cold water should not be drunk as it may cause loss of ruminal motility. In the treatment of ruminal impaction large amounts of water should be given by stomach tube followed by stimulants for the muscular wall. To prevent the disease, an adequate water supply should be available at all times.—E. M. ROBINSON.

*SIEGMANN, K. (1942.) Die Wechselbeziehungen zwischen Kreislauf, Atmung und Körpertemperatur bei fieberhaftchirurgischen Erkrankungen des Pferdes und ihre prognostische Bedeutung. **[Relationships between the circulation, respiration and body temperature in fevered surgical horse cases and their value in prognosis.]**—*Inaug. Diss., Hanover.* [Abst. from abst. in *Dtsch. tierärztl. Wschr.* **51.** 53.] **2195**

The relationship between circulation and respiration on the one hand and body temperature on the other was studied in 24 horses admitted to the surgical clinic for a variety of febrile conditions necessitating surgical operation. Circulation and respiration were closely correlated with body temperature. In addition to the increased pulse and respiration rate which accompanies fever it was noted that in febrile conditions which were severe and protracted there were abnormalities of cardiac rhythm which, if accompanied by a weak pulse, indicated a poor prognosis. The importance of the respiratory system in prognosis must not be unduly stressed because respiration is easily altered by external conditions.—E. G. WHITE.

KOBOZIEFF, N., & POMRIASKINSKY-KOBOZIEFF, N. A. (1943.) Génétique et avortement. **[Genetics, lethal factors and abortion.]**—*Rec. méd. vét.* **119.** 33–42. **2196**

This general account of the subject aims at assessing the role of genetic factors and particularly of lethal genes in the aetiology of abortion.

The exogenous factors concerned in causing abortion are grouped into mechanical, nutritional, and bacterial. Mechanical factors, *e.g.*, disproportions in the size of the uterus and that of the foetus with its membranes, such as may occur with equine twins, and certain monstrosities, are particularly common in certain breeds or strains; there is also an hereditary tendency to uterine malformations and tumours. Heredity plays its part in nutritional abortions, as some strains appear to be less liable to abort under conditions of high yield and permanent housing, often associated with vitamin A deficiency. 65% of equine and porcine and 47% of bovine abortions studied at a German breeding research centre revealed sterile foetuses and membranes; nevertheless infecting agents which may cause abortion include *Mycobacterium tuberculosis*, *Vibrio foetus*, streptococci, pasteurella, *Trichomonas foetus*, *Aspergillus* sp., organisms of the colon-typhoid group, *Brucella abortus*, and filtrable viruses as yet undescribed. But even in these infectious abortions, hereditary predispositions are certain to play a part. In work on 100 German breeding herds containing 4,479 cattle, WAGENER

(1935) found that resistance or susceptibility to brucellosis varied according to the race of cattle, but no exact genetical study of this question has been made for the bovine. In the United States a strain of *Br. abortus* from a pig foetus, injected into pregnant rabbits, produces abortion 14–20 days later, and a genetical study on 224 animals showed heritable factors governing resistance or susceptibility to infection. MANRESA (1932) concluded that the resistance of the rabbits to brucella was represented by two simple dominant factors. Matings within susceptible strains of rabbits yielded mainly susceptible animals and matings between resistant animals produced resistant descendants. On the other hand the crossing of a resistant male with a susceptible female produced 11 daughters of which 10 were resistant and one susceptible. Finally the crossing of 22 heterozygous resistant females with 11 heterozygous resistant males produced 56 living and 22 dead young rabbits, *i.e.*, a ratio of 3 to 1.

With regard to endogenous abortion, all lethal genes are recessives and are closely linked to the genes ruling particular morphological or physiological characters, the latter being either dominant or recessive genes incorporated in either the somatic or the sex chromosomes.

In the case of Dexter Kerry cattle and the "creeper" fowl, a lethal gene is associated with a dominant character and the method of eliminating the lethal factor is to use only homozygous recessives for breeding. Evidence is given for considering that a different type of foetal malformation observed in Russian cattle and characterized by short limbs and badly developed hoofs is due to a lethal gene associated with a recessive character.

An example of a sex-linked lethal gene which behaves as a recessive is given in the work of Upp & Waters on "white lethal" Leghorn hens. The gene is carried on the "X" sex chromosome, with the result that when the heterozygous male is crossed with the viable female, which carries the dominant allelomorph only on its single "X" chromosome, the resulting males are 50% homozygous dominants and 50% heterozygous. The latter survive as well as the former, since the lethal factor is linked to the recessive allelomorph and is therefore masked. But as no masking normal dominant allelomorph is present in 50% of the females, these uniformly fail to hatch.

The occurrence of agnathia in certain strains of Jersey cattle is considered to be a genetically corresponding case in the mammal, all aborted calves with this condition being males.

It is emphasized that the possibility should be considered that endogenous causes may account for any succession of "sporadic" non-bacterial abortions, and the authors are impressed with the possible economic value of isolating genetically brucella-resistant strains of cattle along the lines of Manresa's work on rabbits.

[The value of this paper would be much increased had a detailed list of references to the original articles been appended.]—F. L. M. DAWSON.

ANDERS, M. V. (1945.) **The histopathology of a new type of hereditary loss of coordination in the domestic rabbit.**—*Amer. J. Anat.* **76.** 183–199. [Author's summary copied *verbatim*.] **2197**

The symptomatology of a new hereditary disorder of the nervous system in rabbits, consisting of a progressive failure of motor coordination with later involvement of autonomic functions, has been described. The disorder begins at approximately the seventy-third day of life and progresses in a characteristic manner until the death of the animal 12 to 15 days later. Neuropathological lesions are demonstrable at the onset of the disease. The lesions occur first in the vestibular and cochlear nerves and nuclei and later involve, in addition, the vestibular, pontine, and cerebellar nuclei and fibers, as well as certain other structures such as the medial and lateral lemniscus, the facial and oculomotor nerves and the internal capsule. The correlation between the neuropathological lesions and the clinical abnormalities is discussed.

See also absts. **2221**, **2222** (kidney haemorrhage), **2227**, **2228**, **2230** (sterility), **2243** (goitre), **2292** (diseases of pigs in Canada), **2294** (rabbit diseases), **2295** (poultry diseases), **2133** ("ghedda" of camels).

NUTRITIONAL AND METABOLIC DISORDERS

MILLER, R. C. (1943.) **Wartime problems of feeding and nutrition.**—*J. Amer. vet. med. Ass.* **102.** 300–303. **2198**

The wartime shortage of feeding stuffs, particularly animal proteins, mineral and vitamin supplements, emphasizes the paramount importance of the provision of the best sanitary conditions for all classes of livestock, the control of infections and parasitic diseases and the greatest possible use of pasture and forage crops.

The shortage of animal protein concentrates is especially significant for the nutrition of pigs and poultry. The substitution of vegetable for animal proteins in the rations of these classes of livestock is likely to create deficiencies of Ca and the vitamin B complex. Limestone supplements can supply Ca, but no rock phosphate containing more than 0·1% of fluorine should be used as a substitute for bone meal. Dried yeast and distillery by-products are useful sources of the B complex vitamins for pigs and poultry.

—W. R. MUIR.

CLARK, R. (1944.) **The metabolism of the undernourished body.**—*J. S. Afr. vet. med. Ass.* **15.** 67–69. **2199**

The rapid mobilization of the body reserves in order to supplement an inadequate diet may lead to grave metabolic disturbances causing death without a state of cachexia developing. If the carbohydrate reserve becomes exhausted, the body has to manufacture new glucose from fats and proteins (glyconeogenesis). It has been shown that the development of ketosis in sheep on an inadequate diet is in direct proportion to the amount of fat in the body. Obese non-pregnant sheep placed on a poor diet succumbed in less than 30 days. They showed severe ketonaemia and hypoglycaemia despite the large amount of fat still available. Acute ketosis is therefore the result of a sudden metabolism of fat in the absence of sufficient carbohydrate combustion. Sheep on a poor diet showing hypoglycaemia and hyperketonaemia may suddenly show a marked rise in the sugar and non-protein nitrogen in the blood, with a simultaneous drop in the ketone bodies. In such cases death is probably due to an autointoxication by nitrogenous compounds or to the depletion of essential proteins.—E. M. ROBINSON.

ENDER, F. (1944.) Sporelementenes etiologiske og terapeutiske betydning ved spesielle mangelsykdommer hos storfe og sau i vårt land. Koboltmangel som sykdomsårsak. [**The aetiological and therapeutic importance of trace elements in connexion with certain deficiency diseases in cattle and sheep in Norway. Cobalt deficiency as a cause of illness.**] —*Norsk VetTidsskr.* **56.** 173–186. [English and German summaries.] **2200**

Deficiency disease evidently due to lack of trace

elements occurs in varying degree round most of the coastal areas of Norway. Copper deficiency has been detected in some parts and good results have been obtained by appropriate treatment; instances have occurred, however, in which copper failed to cure.

Led by the literature on cobalt deficiency in the British Empire to suspect a lack of this element, E. had samples of hay from the affected district analysed spectrographically for the presence of trace elements. Cobalt was conspicuously absent, 50 mg. of cobalt sulphate given daily to affected calves proved efficacious, with full recovery within a month. In nine coastal districts similar trials on 97 cattle and 15 sheep had excellent results, especially against the deficiency disease of the Lyngdal valley named "Tørkesjuken". In other parts it was necessary to give cobalt with copper and phosphorus to cure animals affected with "slikkesyke".

The only symptom of these diseases is loss of appetite (occasionally selective appetite for certain constituents of the diet) and progressive emaciation.

—J. E.

KLIGLER, I. J., & GUGGENHEIM, K. (1945.) **The influence of *Salmonella typhi-murium* infection in rats on vitamin A metabolism.**—*J. Hyg., Camb.* **44.** 56–60. [Authors' conclusions copied *verbatim*.] 2201

Young rats infected intraperitoneally with *Salmonella typhi-murium* develop a severe infection, one of the manifestations of which is involvement of the liver. Such infected rats receiving vitamin A by the mouth store the same quantities as do non-infected controls. If such infected rats receive carotene by the mouth the amount of carotene excreted is somewhat higher, and the amount of vitamin A stored in the liver markedly lower, than in controls.

KLIGLER, I. J., GUGGENHEIM, K., & HENIG, E. (1945.) **Susceptibility of vitamin A-deficient and starved rats and mice to a peroral infection with *Salmonella typhi-murium*.**—*J. Hyg., Camb.* **44.** 61–66. [Authors' conclusions copied *verbatim*.] 2202

Mice and rats in a state of hypovitaminosis A are no more susceptible to an oral infection with *Salmonella typhi-murium* than normally fed controls. Mice and rats in a state of avitaminosis A are more highly susceptible than normally fed controls. Paired fed rats receiving an adequate ration of vitamin A, but a total amount of food equal to that consumed by the corresponding animals kept on a diet free of vitamin A, are as susceptible to the enteric infection as the avitaminotic animals. It seems, therefore, that starvation rather than vitamin A deficiency is responsible for the lowered resistance.

MCROBERTS, V. F., & HOGAN, A. G. (1944.) **Adequacy of simplified diets for the pig.**—*J. Nutrit.* **28.** 165–174. 2203

Preliminary trials indicated that there was an excessively high mortality in piglets removed from the dam at birth and that this was in part due to depriving them of colostrum. In subsequent experiments piglets were allowed to suckle for the first days of life before transference to the experimental diets which consisted of casein, sucrose, maize starch, lard, salt mixture and various supplements. Such piglets thrived when the supplement consisted of aqueous extracts of liver or yeast but not (except in isolated cases) when it comprised the known B vitamins together with vitamins E and K. It is suggested that such failures, as contrasted with the results of HUGHES [*V. B.* **11.** 551], are in all probability due to the failure of the very young animals to synthesize unidentified vitamins through the agency of the intestinal flora. Many deaths are attributed to failure to consume adequate quantities of the experimental diets during the first few days.

—A. N. WORDEN.

MILLS, C. A. (1943.) **Heightened thiamine and choline requirements in tropical heat.**—*Proc. Soc. exp. Biol., N.Y.* **54.** 265–266. 2204

Experiments similar to those previously reported [see *V. B.* **15.** 236] confirmed that the requirements of young male white rats for vitamin B_1 and choline were greater at an environmental temperature of 90°–91°F. than at one of 68°F. The diets employed differed from those in the previous experiments only in the addition of 5 mg. of 2-methyl-1,4-naphthoquinone and of 50 mg. of α-tocopherol respectively per kg. of ration. Precautions were taken to ensure that the apparent results were not due to increased destruction of the vitamins in the food at the higher environmental temperature. The difference in growth requirements was assessed over a period of several weeks and it is suggested that the negative results obtained in short-term experiments by KEYS (1943) are of no significance.—A. N. WORDEN.

—. (1944.) **Niacin and necrotic enteritis in swine.**—*Nutr. Rev.* **2.** 14–16. 2205

It has been estimated that under normal conditions 40% of the pigs born each year in the U.S.A. die before they reach market size; necrotic enteritis is one of the diseases which is responsible for large numbers of these deaths.

The work dealt with in this review was abstracted earlier in the *Vet. Bull.* It is suggested that sulphaguanidine with nicotinic acid should be used for the treatment of the condition. The question of whether or not nicotinic acid, alone or in combination with other B vitamins, is of prophylactic value is left open.

—ALASTAIR N. WORDEN.

MUDROW, L., & SCHULTZ, F. (1943.) Die Rattenlepra unter Vitaminmangel und bei chronischer Sapotoxinverabreichung. **[Rat leprosy in vitamin deficiency and chronic sapotoxin intake.]**—*Zbl. Bakt. I. (Orig.).* **151.** 50–59. 2206

In a series of experiments on rats on the relation between vitamin intake and the development of leprosy, rats 5–7 weeks old were fed on a synthetic diet deficient in biotin but with a high caloric value and were infected subcutaneously with washings of leprosy bacilli. The average weight of these rats rose to one and a half times that of control rats similarly infected and fed on a mixture of barley, oats and maize, and their leproma development was both faster and more intense.

In a second experiment the authors followed up the work of DAFT *et al.* [see *V. B.* **10.** 543 and **11.** 630] who claimed that a deficiency of pantothenic acid led to severe degeneration of the adrenals, and of OBERDORFF (1941) who observed that in cases of human leprosy there was frequently hereditary or acquired degeneration of the adrenal glands which favoured the development of the disease.

In animals which received from the time of infection a diet deficient in pantothenic acid, there was 100% generalized infection as against 28% in controls and growth was considerably retarded. Adrenal degeneration was also present. In one group of rats receiving daily 10 mg. of pantothenic acid *per os* (200 times the normal requirement) the generalization of infection was inhibited. Leproma development was similar in rats on both normal and pantothenic acid-deficient diets. There appeared to be some slight retardation of leproma development in rats receiving 50 mg. sapotoxin per kg. body weight three times weekly, but no definite conclusions could be drawn.

In contrast to BADGER *et al.* (1940), the authors conclude that neither the retardation of leproma development in rats deficient in vitamin B_1 nor the increased generalization of leprosy may be taken as being related

specifically to vitamin B_1 intake since similar appearances may occur with other avitaminoses. There is however some underlying relationship between vitamin deficiency and the spread of infectious disease.

HOLMES, A. D., LINDQUIST, H. G., JONES, C. P., & WERTZ, A. W. (1945.) **Effect of high-temperature-short-time pasteurization on the ascorbic acid, riboflavin and thiamin content of milk.**—*J. Dairy Sci.* **28.** 29–33. [Authors' summary copied *verbatim.*] **2207**

Twenty lots of milk were pasteurized at irregular intervals during eighteen months by the high-temperature-short-time process. The milk was assayed for ascorbic acid, riboflavin, and thiamin just before and immediately following pasteurization. The average values obtained were 16·4 mg. per liter of ascorbic acid for the raw, and 16·6 mg. for the pasteurized milk; 1·50 mg. per liter of riboflavin for the raw, and 1·50 mg. per liter for the pasteurized milk, and 0·36 mg. per liter of thiamin for the raw, and 0·35 mg. per liter for the pasteurized milk.

MILLS, R. C., BRIGGS, G. M., Jr., LUCKEY, T. D., & ELVEHJEM, C. A. (1944.) **Production of unidentified vitamins by a strain of *Mycobacterium tuberculosis* grown on synthetic medium with p-aminobenzoic acid.**—*Proc. Soc. exp. Biol., N.Y.* **56.** 240–242. **2208**

Bacteria-free filtrates from a 14-day-old autoclaved culture of a human strain of *M. tuberculosis* grown on Long's synthetic medium supplemented with 1 g. of *p*-aminobenzoic acid were found to contain considerable amounts of the unidentified vitamins (B_{10} and B_{11}) which promote growth and feathering in chicks. The active material was prepared from the acidified culture filtrate by norite adsorption, followed by elution and vacuum concentration.—J. L. MCGIRR.

—. (1944.) **Toxaemic jaundice. Report of the Investigation Committee, 1943-44.**—*Aust. vet. J.* **20.** 265–268. **2209**

This is a report by the Investigation Committee on toxaemic jaundice of sheep [this committee being representative of the Department of Agriculture, New South Wales, the Council for Scientific and Industrial Research and the Melbourne University Veterinary Research Institute] and includes details of experimental work and a field survey. The effects of licks containing ferrous sulphide and of a high and a low plane of nutrition on liver copper storage and the incidence of toxaemic jaundice were studied experimentally. No untoward results were observed in sheep pastured on *Heliotropium europoeum.*

Liver damage and obstructive jaundice are reported to an increasing extent. The Committee's statement on the probable pathogenesis of the disease includes a description of acute haemolytic jaundice due to sudden mobilization of liver copper stores, death being due to blockage of renal tubules with haemoglobin casts and terminal uraemia; there is a second type in which a slow destruction of liver cells is caused by the accumulation of copper in the liver, the animals dying from liver dysfunction.

In experimental groups with high copper and iron intakes, the amount of copper stored in the liver was approximately inversely proportional to the amount of iron stored.—D. C. BLOOD.

See also absts. **2132** (equine abortion and diet), **2271** (thiamine), **2251** (ascorbic acid), **2292** (vitamin A in pigs), **2271**, **2272** (acetonaemia).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

RIEMERSCHMID, G. (1943.) **Some aspects of solar radiation in its relation to cattle in South Africa and Europe.**—*Onderstepoort J. vet. Sci.* **18.** 327–353. **2210**

The sector from which the solar rays strike a horizontal surface during the midday hours is much closer to the horizon in Europe than in South Africa; the layer of air at equal altitudes between the sun and the observation station is therefore denser in Europe than in South Africa. The conception that radiation is many times more intense in South Africa than in Europe has been proved incorrect. In some South African localities there may be twice as much bright sunshine daily on the average as compared with Europe. During the two hottest months of the year the average maximum air temperature at eight South African stations is 11°–23°F. and at six European stations 33°–44°F. below normal body temperature of cattle. During the coldest months the average difference between air and body temperature is 25°–37°F. in South Africa and 57°–59°F. in Europe (average of Kew, Aberdeen and Davos readings).

The yearly total of incident radiation is 187 kilogramme calories per sq. cm. at the South African inland stations as compared with 103 kg.-Cal. per sq. cm. on the lowlands of Central Europe. A comparison of the total amount of radiation absorbed by the hairy coat and the heat produced by metabolism, shows that cattle absorb on a hot summer's day nearly three times as much heat from radiation as they produce by metabolism during an equal period. Figures are given which show that by providing shade the amount of heat absorbed by the hairy coat of cattle can be reduced to 30–40% of the amount which impinges on the animal in the open veldt.—E. M. ROBINSON.

VINT, F. W. (1944.) **Solar rays. Facts or fiction?** —*E. Afr. med. J.* **21.** 227–239. **2211**

The author reviews the literature dealing with the possible effects of solar radiation on the living organism, with special reference to skin pigmentation and to the physiology of the African native. He surveys a wide field, including loss of fluid and NaCl by sweating, which possibly produces changes in the potassium balance of the body, the development of histamine in the skin in response to irritation by the sun's rays, changes in the metabolic rate and the development of vitamin D and its relation to the parathyroid glands. —N. J. SCORGIE.

BURROWS, H. (1944.) **The union and separation of living tissues as influenced by cellular differentiation.** —*Yale J. Biol. Med.* **17.** 397–402. **2212**

B. cites a number of examples to illustrate what seems to be a common principle in embryological architecture, *viz.*, that undifferentiated cellular tissues when kept in contact usually become more or less firmly blended. Epithelial cells united in this way, however, become detached if their cells undergo differentiation.

In part I of this paper, these principles are exemplified by reference to the union and separation of the prepuce, the glans penis and the glans clitoris under the influence of androgen. During embryonic life the glans penis is gradually enveloped by the growing prepuce, the embryonic epithelial lining of which, coming into contact with the surface of the glans, becomes closely attached to it. Normally the two structures come apart later, though the stage of life at which they separate varies with different species. In several animals (mouse, rat, cat and bull) where separation does not take place until a considerable interval after birth, castration will,

if performed early enough, prevent separation. This sequel to castration was studied in the cat, rabbit, rat and mouse by the present author, who describes the histology of the undifferentiated epidermis uniting the surfaces of prepuce and glans. That the fate of the epithelial unions described is controlled by androgen has been proved by a number of workers by direct experiment. B.'s observations have shown that whether brought about naturally through testicular activity or artificially through the administration of androgen, the separation of the adherent prepuce from the glans is caused by the keratinization of the embryonic cells composing the adherent epithelia. This reaction is confined to those organs of the male where it can be of functional value, or to their homologues in the female, other epithelial tissues not being affected.

In part II of the paper the union and separation of other organs, *e.g.*, eyelids, earlobes and scalp, the digits of the mouse etc., not under the influence of androgen are discussed. The close resemblance between the processes mentioned suggests that these like those mentioned in part I, may depend on hormones.

—N. J. S.

Spielman, A. A., Petersen, W. E., Fitch, J. B., & Pomeroy, B. S. (1945.) **General appearance, growth and reproduction of thyroidectomized bovine.**—*J. Dairy Sci.* **28.** 329–337. **2213**

Five female and one male bovine were thyroidectomized at ages varying from 34 days to 45 months. When thyroidectomy was performed at 13 or 15 months, the changes ensuing were typical of hypothyroidism as exhibited by other mammals; the hair became dry and brittle and the hind limbs became swollen with an increase of synovial fluid in the hock joints; persistent ascites developed three months after thyroidectomy, body temperature was subnormal with a fall in pulse rate, appetite decreased and constipation became chronic. Thyroidectomy at 45 months led only to apathy, increased fat, lowered metabolism and diminished reflexes. Partial thyroidectomy did not produce symptoms of hypothyroidism in immature or mature bovines.

One cow, thyroidectomized during pregnancy, resumed growth and failed to exhibit typical hypothyroidism as pregnancy advanced, presumably because of diffusion of thyroid hormone from the developing foetus. Thyroidectomy in the male bovine caused complete inhibition of *libido* but had no effect on spermatogenesis; the oral administration of fresh thyroid, dinitrophenol and testosterone propionate temporarily restored normal breeding behaviour. In the thyroidectomized female, oestrus was completely absent but was manifested after feeding thyroid extract. Manual examination of the ovaries showed that ovulation occurred and this was confirmed by the production of three normal calves from three thyroidectomized cows artificially inseminated with semen from the thyroidectomized bull.

—Alex. B. Paterson.

Montgomery, M. L., Entenman, C., & Chaikoff, I. L. (1944.) **The estimation of the anti-fatty liver factor of the pancreas and of pancreatic juice by the use of the completely depancreatized dog maintained with insulin.**—*Amer. J. Physiol.* **141.** 216–220. **2214**

Normal dogs fed an adequate high-protein diet for 2–4 weeks, are pancreatectomized and then fed twice daily with a mixture of 250 g. lean meat, 50 g. sucrose, 10 g. bone ash and 1 g. Cowgill's salt mixture, each meal being followed by an injection of 8 units of insulin. 3 ml. sardilene oil plus 5 g. yeast are fed each morning and 125 g. raw pancreas are added to each meal for 2–8 weeks after pancreatectomy, until normal appetite is regained. The raw pancreas is then withdrawn from the diet, and the constituent to be tested for anti-fatty liver factor substituted and fed for 16–20 weeks. At the end of this period the animals are killed, the liver is excised, ground and thoroughly mixed and a sample analysed for total fatty acids. A normal fat content is taken as evidence of presence of anti-fatty liver factor in the constituent fed. Although fatty livers have been observed 3–5 weeks after pancreatectomy, this is not a constant finding and excess liver fatty acids (above 14%) are only found consistently 20 weeks after pancreatectomy. The preliminary period of feeding raw pancreas, included to ensure a complete return to normal after pancreatectomy, did not influence the deposition rate of fatty acids during the subsequent period in which raw pancreas was not fed. There is thus no possibility of storage of any anti-fatty liver factor while raw pancreas is being fed.—Alex. B. Paterson.

Entenman, C., Montgomery, M. L., & Chaikoff, I. L. (1944.) **The effectiveness of lipocaic in preventing fatty livers in completely depancreatized dogs maintained with insulin.**—*Amer. J. Physiol.* **141.** 221–226. **2215**

Lipocaic is a pancreatic preparation stated by Dragstedt to prevent fatty liver formation in depancreatized dogs, and to be a second pancreatic intimal secretion. Adult depancreatized dogs, maintained on insulin, were fed daily for periods of 8–20 weeks amounts of lipocaic equivalent to 100 g. original pancreas. Six of the nine dogs thus fed developed fatty livers, although as little as 5·5 g. pancreas fed daily maintains a normal fat content in the liver of depancreatized dogs. Lipocaic, similarly administered to seven dogs, failed to prevent the fall of blood cholesterol, phospholipoids, or total fatty acids found in pancreatectomized dogs; normal blood lipoid levels are maintained by feeding raw pancreas. Lipocaic is evidently a poor source of the anti-fatty liver factor of the pancreas.—Alex. B. Paterson.

*Lison, L. (1940.) Le pouvoir phagocytaire du tube contourné du rein des mammifères, démontré par des expériences de micro-injection intratubulaire directe. [**The phagocytic power of the convoluted tubules of the kidney of mammals.**]—*Acta biol. belg.* **1.** 77. [Abst. from abst. in *Bull. Inst. Pasteur.* **41.** 267.] **2216**

L. injected a suspension of indian ink into the urinary tube by means of special micropipettes. [The abstract of the original paper leaves vague the exact part of the renal system where the injection was made.] The animals were killed 48 hours after injection and when the kidneys were sectioned the particles of ink were found in the form of granules in the cells of the convoluted tubules of the kidney. L. cites this as evidence of the capacity of these cells for phagocytic resorption.—A. Eden.

Delaunay, A., & Vendrely, R. (1942.) Recherches sur le chimiotactisme leucocytaire. Pouvoir chimiotactique des nucléoprotéides bactériens. [**Chemotaxis of leucocytes. Chemotactic power of bacterial nucleoproteins.**]—*C. R. Soc. Biol. Paris.* **136.** 642–643. **2217**

The chemotaxis of leucocytes brought about by bacterial nucleoproteins is not destroyed by heating to 57°C. for one and a half hours or by digestion with pepsin or trypsin. This chemotactic power of bacterial nucleoproteins is more marked than that of their degradation products or of proteins extracted from organs of the g. pig or horse.—M. L. Levi.

Stewart, M. O., Florio, L., & Mugrage, E. R. (1944.) **Hematological findings in the golden hamster (*Cricetus auratus*).**—*J. exp. Med.* **80.** 189–196. **2218**

The following blood values were obtained in a group of 114 hamsters of both sexes and various ages.

Haemoglobin	17·6 g. per 100 ml.
Erythrocytes	7·5 millions per cu.mm.
Volume of packed cells	47·4%
Leucocytes	8·56 thousands per cu.mm.
Non-segmented granulocytes	11·2%
Segmented granulocytes	17·8%
Total granulocytes	29·0%
Lymphocytes	67·9%
Monocytes	2·43%
Eosinophiles	0·68%

The average red blood cell diameter was 6·6μ, when measured directly, without an anticoagulant, or 6·5μ when oxalate was used.—Isobel W. Brocklehurst.

Wertheimer, E., & Stein, L. (1944.) **The cold-susceptible globulin fraction of pathologic sera.**—*J. Lab. clin. Med.* **29.** 1082–1089. **2219**

Following up their investigations of 1942, the authors present the results of further studies on the "cold fraction" of the proteins of pathological sera (the "cold fraction" being that which precipitates when the sera stand for 1–3 days at 7°–11°C.). The data suggest that the fraction is a pathological entity and quite independent of the normal globulins. It appears to occur most uniformly and in greatest amount in kala-azar but is also present in other chronic conditions such as malaria and TB.—J. Lochiel McGirr.

Staritskiĭ. (1943.) Opyt transportirovaniya konservirovannoĭ krovi loshadi. **[Transport of conserved horse blood.]**—*Veterinariya, Moscow.* No. 1. p. 41. **2220**

Conserved horse blood was transported for eight hours at 18–19°C. by cart and goods wagon over rough forest roads and stone-paved streets and remained available for transfusion 2–3½ days later.

A simply made double box, the inner one containing six nests and fitted with a thermometer, was used for this purpose. 1-litre bottles containing 100 ml. of 5% potassium citrate were sterilized for 1 hour. A 2·5% solution of glucose was sterilized separately for 30 min. and 10 ml. were put in the bottles immediately before the taking of the blood.—E. Cherkesi.

*Csiszár, W. (1943.) **[The nature of petechial kidney haemorrhages in sucking calves.]**—*Állatorv. Lapok.* **20.** 115. [Abst. from abst. in *Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **52/50.** 34.] **2221**

Carrying out observations on 82 calves slaughtered for food and 28 healthy sucking calves, the author observed petechial haemorrhages in the kidney in the absence of disease of bacterial or toxic origin and with completely negative bacteriological findings. They were found in cases where there was traumatic injury to the spleen. Punctiform haemorrhages in the kidney are often accompanied by *Salmonella enteritidis* infection but are also seen when the bacteriological examination is negative or reveals only saprophytic organisms. Ice-cold water given orally or introduced *per rectum* did not cause kidney haemorrhages but resulted in intestinal inflammation, hyperaemia of the kidney and glomerular nephritis. All the lesions are explained by the peculiar structure of the kidney which favours bleeding.

—T. E. Gibson.

Patterson, J. M., Keevil, N. B., & McHenry, E. W. (1944.) **Choline and the prevention of haemorrhagic kidneys in the rat. II. Phospholipid turnover determined with radioactive phosphorus.**—*J. biol. Chem.* **153.** 489–493. [For part I, see *V. B.* **13.** 138.] **2222**

The age, sex, basal diet and vitamin supplements of the rats employed were identical with those in the previous series of experiments. One group received 3 mg. of choline per g. of the basal diet while a second group was maintained without choline. On the ninth experimental day all animals, after being fasted for 12 hours, were injected with 1 ml. of an isotonic solution of disodium hydrogen phosphate containing radioactive P. Five hours after the injection the animals were killed and their livers and kidneys pooled for phospholipoid estimations. A control series of rats, not injected with radioactive P, received the dietary supplement of choline at intervals for a period of 30 days, during which time individuals were slaughtered for the estimation of phospholipoid concentration and turnover in liver and kidneys. Measurements of the recovery of radioactive P from the tissue phospholipoids confirmed the decreased phospholipoid turnover in the case of rats not fed choline. The experiments with the rats not injected with radioactive P indicated that the phospholipoid concentration and turnover were least on the 1st experimental day (when the animals were 22 days of age), increased to a maximum on the 6th day and then declined to the 30th day. The period at which phospholipoid concentration and turnover are greatest therefore coincides with the age at which choline deficiency causes marked renal lesions.—A. N. Worden.

Mrazek, R. G., Jensik, R. J., & Reed, C. I. (1944.) **The influence of an activated sterol on blood pressure in dogs.**—*Amer. J. Path.* **20.** 857–864. **2223**

Observations on the blood pressures of 20 dogs during successive control and experimental periods demonstrated that vitamin D (as the commercial product, Ertron) failed to produce hypertension even when approximately 5–10 thousand units per kg. of body weight were administered daily; these doses were, however, toxic enough to produce anorexia and marked loss of weight. The intra-arterial needle method was used to measure the blood pressure and readings were taken at intervals of 1–5 days. The experimental animals were kept under observation for periods of 38–187 days, which included control periods of 1–6 weeks.

Some extremely high and some extremely low blood pressures were observed in all animals during both control and experimental periods but these extreme values could seldom be correlated with any demonstrable change in the animals' conditions or environment.

Histopathological examinations were made of the tissues of eight dogs. Only in the kidneys were marked changes found and these were in the form of varying degrees of arteriolar medial hypertrophy, cuneate areas of fibrosis and lymphocytic infiltration. Of these eight dogs, three had shown marked increase in average blood pressure during the experimental period, one had shown a decrease and four had shown no marked change. No correlation could be found between vitamin D dosage, blood pressure and degree of pathological change.

Standardized adrenalin tests on eight dogs demonstrated that sensitivity to this drug was not increased by the toxic doses of vitamin D.—W. R. M.

McAnally, R. A. (1943.) **Studies on the alimentary tract of merino sheep in South Africa X.—Notes on the digestion of some sugars in the rumen of sheep.**—*Onderstepoort J. vet. Sci.* **18.** 131–138. [For part IX, see *V. B.* **15.** 336.] **2224**

In these experiments rumen ingesta was withdrawn through a fistula. It was found that the time of withdrawal of ingesta was important and that the fermentative power of pre-feed ingesta was considerably greater than that taken later.

It was shown that gas formation was most active when the concentration of sugar relative to the ingesta

was 0·1–0·2 g. to 8 ml. of ingesta filtrate. The results of the experiments show the extreme rapidity with which sugars are fermented by rumen ingesta, the rate and degree of fermentation depending on the type of sugar, the concentration, the nature of the ingesta and the time of its withdrawal. Accompanying the evolution of the gas there was a rapid rise in total acids in the fermentation tubes, the reason for which requires further investigation.—E. M. Robinson.

Cupps, P. T., & Asdell, S. A. (1944.) **Changes in the physiology and pharmacology of the uterine muscle of the cow in relation to the estrous cycle.**—*J. Anim. Sci.* **3**. 351–359. 2225

This study deals with the normal activity of the excised uterine musculature of the cow at different stages of the dioestrous cycle, the relation of this activity to the size of the muscle cells and the influence of certain drugs at the different stages. The excised strip technique was used and the material for study was obtained from ten heifers and one multiparous cow, which were killed at known stages of the dioestrous cycle. Spontaneous uterine motility was found to be greatest during pro-oestrus and oestrus; it became irregular during metoestrus and died down during dioestrus. Motility comprised two types of waves, strong contractions of great anplitude at intervals of 1½–2 min. and small contractions at 20–30 sec. intervals. As the circular muscle had been removed from the preparations, it was not thought that the smaller contractions were due to this component.

Pituitrin, arecolin, and lentin (carbamylcholine chloride) produced strong tonic contractions at all stages of the dioestrous cycle. Eserine gynergen (ergotamine tartrate) and pilocarpine had very irregular effects and were mainly inert. Epinephrin was inhibitory during and shortly after the oestrogenic phase and motor during the progestational phase. The conclusion is drawn that the parasympathetic nervous system is without influence upon the uterine musculature of the cow and that lentin and arecoline produce their effects through some other mechanism, probably, as pituitrin is believed to do, by direct action upon the cell.

The muscle cells of the uterus were found to grow in length during the oestrogenic phase and decrease in length during the rest of the cycle, the growth impulse starting at the apices of the uterine horns and travelling caudally.

The authors point out that the activity and growth in uterine muscle cannot have much influence upon the egg, since the latter enters the uterus at a relatively quiet period, when the cells are decreasing in size. [See also abst. following.]—N. J. Scorgie.

Markee, J. E. (1944.) **Intrauterine distribution of ova in the rabbit.**—*Anat. Rec.* **88**. 329–336. 2226

The object of the investigation here reported was to obtain more precise information as to the factor or factors involved in the uniform intrauterine distribution of ova in the rabbit. Stained sea urchin ova in quantities of approximately 100 ova in 0·1 ml. of normal saline were injected directly into the uterine lumen, about 1 cm. from its tubal end, in four groups of "spinal" rabbits, *i.e.*, rabbits in which the spinal cord had been transected at the 5th or 6th thoracic segment during oestrus, at the time of ovulation and five and ten days later respectively. The ova were found to be distributed most evenly in the oestrous rabbits, nearly as evenly in the ovulation group and fairly evenly in the 5-day group; there were none distributed in the 10-day group.

Such factors as the contraction of abdominal muscles, gravitational force, ciliary action, intestinal peristalsis and generalized body movements appear to have been eliminated as causative factors in the distribution of the ova. It appears that the ova were distributed by the contractions of the uterine muscle and this assumption is supported by direct observations of uterine contractions through a glass window in the abdominal wall. During oestrus and for five days after ovulation, three types of contractions were observed, local, peristaltic and anti-peristaltic. It was observed that the peristaltic contractions seemed most effectively to distribute uterine contents and it was thought that these were primarily involved in the distribution of the rabbit's own ova, although the other two types also appeared to be capable of effecting distribution. The contractions decreased markedly between the fifth and tenth days after ovulation.—N. J. Scorgie.

Laing, J. A. (1945.) **Observations on the characteristics of the semen in relation to fertility in the bull.**—*J. agric. Sci.* **35**. 1–24. 2227

This investigation involved a study of the characteristics of the semen of 21 bulls and a comparison of these with the fertility of the bulls, as expressed by the service rate, *i.e.*, the number of services required for each conception. L. found that, from consideration of the density of the semen sample, the total number of spermatozoa ejaculated, the motility and the change in pH of the semen on incubation at 37°C., the bulls could be divided into a higher fertility group with service rates from slightly more than 1·0 to about 3·5 and a lower fertility group with service rates from above 3·5 to ∞.

A study of the relationship between the fertility of mating and the density of the semen ejaculated indicated that the second, and perhaps the third ejaculates, were more representative of the bull's fertility level than was the first, all ejaculations being made at intervals of 15 min. The density at which fertility began to be reduced was in the region of 500 million spermatozoa per ml. of semen. It was also found that as the total number of spermatozoa per ejaculate decreased, the service rate increased. When the total number fell below about 1,100 millions in the second ejaculate, or 5,000 millions in the first and second ejaculates, fertility began to be markedly decreased. As in the case of the density, the total number of spermatozoa in the second ejaculate seemed to be the more closely related to the service rate.

With a view to providing a simple non-subjective method of measuring semen quality, which could be applied in the field, L. studied the relationship of the pH of the semen at collection and after incubation at 37°C. for 1 hour to its density, motility, respiration rate and service rate. The results indicated that the fall in pH on incubation at 37°C. for 1 hour provided a satisfactory indirect method of measuring the metabolic activity of a sample of semen, and from this the density and motility of the sample. The average final pH of a series of second ejaculates was more closely related to fertility of the semen sample than were the average pH determinations obtained with the first, third and fourth ejaculates. This was in agreement with the extent to which fertility diagnosis was possible from estimation of the density and total number of spermatozoa in the semen. The second ejaculate was thus the most closely related index in the characters studied to the fertility of the bull as expressed by the service rate.

Using semen from 14 bulls, and not less than three and in most cases four ejaculates from each bull, no relationships could be detected between the percentage of abnormal spermatozoa ejaculated and the service rate.

It is suggested that certain factors other than the quality of the semen can vary fertility so as to give service rates at different levels from 1·0 to about 3·5. On the basis of the results of this investigation, L.

suggests standards, based on the second sample of semen, which might be applicable for the diagnosis of fertility in the bull under field conditions.—N. J. S.

MERCIER, E. (1944.) **The relationship between the proportion of morphologically abnormal spermatozoa and other criteria of bull semen quality.**—*Thesis, Cornell.* pp. 66. 2228

The author feels that during recent years undue emphasis has been placed on the morphological examination of spermatozoa as an estimate of semen quality. Since its application requires skill and considerable time, it is not easily done in the field. Work was undertaken to determine the relationship between the percentage of morphologically abnormal spermatozoa and other characteristics of bull semen quality which can be measured with sufficient accuracy in a relatively short period of time.

Sixty-five semen samples were studied. The statistical analysis of the data reveals that the examination of 100 sperm cells on different spots of a single smear from one ejaculate gives a good representation of the proportion of morphological abnormalities in a semen sample.

The total percentage of morphologically abnormal spermatozoa did not show any correlation with the other criteria for semen quality used in this study. The percentage of morphological abnormalities, excluding tailless heads, showed a highly significant negative correlation with the volume of semen and a slightly negative relationship with the motility of the spermatozoa and the ascorbic acid content of the semen.

The methylene-blue test used and recommended for estimating bull semen quality in the field was not correlated with the proportion of morphologically abnormal spermatozoa in the present study. Even though the morphological examination of spermatozoa is facilitated by a staining procedure which permits an easy observation of the morphological structure of the sperm cell and by the observation of a relatively small number of spermatozoa on one smear, it is still a time-consuming test. It would not be wise to recommend its adoption in routine work before undertaking a comparative study of the proportion of morphological abnormalities and the methylene-blue reduction test in relation to fertility in healthy cattle.—H. L. GILMAN.

DONALD, H. P. (1944). **Pedigree bull production in relation to bull licensing.**—*Vet. Rec.* **56.** 352–353. 2229

In 1938, approximately 110,500 bulls were being used for service in the United Kingdom; of these about 4,600 were in N. Ireland, 18,000 in Scotland and 87,900 in England and Wales. In England and Wales in the same year, about 37,000 bulls were licensed, which may be regarded as replacements for the 87,900 bulls in use; this meant that assuming that there is no great fluctuation in numbers from year to year, about 40–45% of the bulls in use were being replaced annually. In Scotland, the corresponding figure was 45–50%. From a consideration of the numbers of bulls registered in pedigree herd books in 1939, the author estimates that the proportion of pedigree bulls to all bulls in service is between 54 and 68% in Scotland and between 30 and 37% in England and Wales. He compares the actual and estimated potential pedigree bull production with the number licensed in England and Wales and shows that, theoretically, some breeds could produce all the pedigree bulls needed, while others, particularly the Shorthorn, Devon and perhaps the Lincoln Red, would find it difficult or impossible without expansion. With regard to the speed with which a breed might expand in response to a demand for breeding stock, reference is made to data showing the recent growth of the Ayrshire and British Friesian breeds, which indicate that at a steady rate of increase of 10%, it would take about 7–8 years for a breed to double its registrations and 11–12 years to treble them. The author discusses some implications of the present system of bull licensing and concludes that, from the genetic point of view, it is rather an inefficient form of mass selection.—N. J. SCORGIE.

HAISCH, A. (1944.) Versuche mit Prolan in Oel bei konstitutionell bedingter Sterilität des Rindes, insbesondere bei Untêrentwicklung der Ovarien, Nymphomanie, Metritis und Scheidenvorfall. [**Use of prolan in oil for sterility in cattle.**]—*Berl. Münch. tierärztl. Wschr. [Wien. tierärztl. Mschr.* Feb. 4th. 46–47. 2230

Results and dosages (in rat units of prolan) are given for the treatment of 97 cases of sterility in three native breeds of cattle. After the administration of 250 units, of 12 cows with ovarian hypoplasia 11 came into oestrus and conceived; of six acyclic cows, three of which had follicular cysts, all conceived and of three cows with persistent corpus luteum, three came into oestrus and two conceived.

In nine cows with severe nymphomania, seven of which had ovarian cysts, six conceived after the administration of 1,000–1,500 units. A single dose of 25 units was effective in 19 out of 25 cases of simple metritis; in 15 out of 19 cases of severe metritis, conception followed uterine irrigation with Lugol's iodine, plus a dose of 500 units of prolan. H. also reports partial or complete success following the administration of 250–1,000 units in 21 out of 23 cases of post-parturient uterine prolapse. He suggests an inherited constitutional factor in this condition and in nymphomania and metritis. He notes breed differences in the incidence and severity of all these conditions and in the response to prolan.—A. C.

QUIN, J. I., & VAN DER WATH, J. G. (1943.) **The effects of diethyl-stilboestrol and pregnant mare serum on the oestrous cycle of merino ewes.**—*Onderstepoort J. vet. Sci.* **18.** 139–147. 2231

Stilboestrol was given to 43 ewes in a state of anoestrus during the months of November and December. Thirty-two were given intramuscular injections and of these eight came into full oestrus. Eleven dosed *per os* did not come into oestrus. Ovulation and corpus luteum formation occurred. Ewes injected during the height of the sexual season showed ovulation usually without oestrus. Of ewes spayed 12 months previously, all came into oestrus when injected with stilboestrol.

Injections of serum from mares 90 days pregnant into merino ewes had no effect in producing oestrus. —E. M. ROBINSON.

LASLEY, J. F., & BOGART, R. (1944.) **A comparative study of epididymal and ejaculated spermatozoa of the boar.**—*J. Anim. Sci.* **3.** 360–370. 2232

The results reported in this paper indicate that epididymal spermatozoa of the boar differ from those in ejaculated semen; the evidence suggests that morphological and other cellular changes rather than environmental factors contribute to this difference. Spermatozoa from the epididymis of the boar stored *in vitro* remained alive for a longer period of time than spermatozoa in ejaculated semen. At any time, the epididymal spermatozoa showed only slight motility, whereas the ejaculated sperms were highly motile. Epididymal spermatozoa were considerably more resistant to cold shock than were ejaculated spermatozoa. By use of the opal-blue–eosin stain technique, a protoplasmic droplet was clearly visible on the mid-

piece near the head of the spermatozoa obtained from the head of the epididymis, on the posterior part of the midpiece of spermatozoa obtained from the tail of the epididymis and the vas deferens; this was absent in ejaculated spermatozoa. There seemed to be a relation between the position of the protoplasmic droplet and the bending of the tails during storage. It is suggested that spermatozoa showing bent tails are undeveloped ones whose presence in the semen may result from over-use of the male or from a disturbance in spermatogenesis. It is concluded that these morphological changes in ejaculated spermatozoa, together with their greater motility and lowered survival *in vitro*, appear to be of a cellular nature and independent of the fluid in which they are suspended.—N. J. Scorgie.

Pearson, O. P., & Bassett, B. F. (1944.) **Size of the vulva in the fox and its relation to fertility.**—*Anat. Rec.* **89.** 455–459. 2233

Since 1936 the vulva of each silver fox vixen at the United States Fur Animal Experimental Station has been examined at regular intervals during the oestrous and pro-oestrous periods and its size and condition recorded. The greatest size is reached and regression begins one or two days before the female becomes receptive. The breeding results indicated that there was a close relation between the maximum recorded size of the vulva and the mean number of pups whelped per mated female. Further analysis of the data also indicated that the size of the vulva was related to failure to whelp, to the survival of litters and probably to litter size; superior performance in each case was associated with large size of the vulva.—N. J. Scorgie.

Pearson, O. P., & Enders, R. K. (1944.) **Duration of pregnancy in marten, mink, and related species.**—*Amer. Fur. Breed.* **17.** No. 1. 24, 26 & 28 and No. 2. 26, 28 & 30. 2234

The mating seasons and gestation periods are tabulated for ferret, mink, skunk, badger, weasel, marten and fisher [*Mustela pennanti*].

In the last four of these species, the embryos remain as unimplanted blastocysts for several months, the young being born in the spring. It is suggested that the low fertility of martens in captivity is associated with this lag period. Since it is probable that development is resumed in response to lengthened daylight an attempt was made to shorten gestation and improve fertility by artificial illumination. Eight female martens mated in July and August were subjected to increasing periods of illumination starting in late September. Two gave birth after three months' illumination, *i.e.*, 3–4 months before the normal time. A third showed advanced pregnancy at laparotomy. The fertility rate of three litters from eight single matings was better than normal, but as the young born in midwinter all died early, apparently from exposure, it is concluded that illumination does not overcome the difficulty of low fertility.

Gestation in the mink varies from 40 to 76 days, litters being born in late spring. Figures given by authors show a tendency for early matings to be followed by longer gestation periods than late matings. In order to find whether this variability is due to delayed implantation, mink were examined 11–20 days after mating, and it was found that none of the 47 blastocysts had commenced to implant. In illumination experiments, 29 mink showed an average gestation period shortened by three days and also less variable, as compared with controls.

The hormonal mediation of the light effect is discussed, but the diversity of breeding habits among related species stands in the way of a simple hypothesis. —T. H. French.

Rothchild, I., & Fraps, R. M. (1944.) **On the function of the ruptured ovarian follicle of the domestic fowl.**—*Proc. Soc. exp. Biol., N.Y.* **56.** 79–82. 2235

Experiments are described which led to the conclusion that the ruptured ovarian follicle of the hen exerts an influence on the ovum during its passage through the oviduct. The removal of the ruptured ovarian follicle or of this follicle together with the oldest maturing follicle, at the time when the egg taking its origin from the ruptured follicle was in the oviduct, almost invariably resulted in the holding of the egg beyond the expected time of lay. Most eggs were held 1–7 days. The removal of the second most recently ovulated follicle, the most recently ruptured being left intact, or of the oldest maturing follicle alone, never resulted in comparable holding of the egg. Sham operations, in which the follicles were handled but not removed, had no effect.—J. D. Blaxland.

Stoss, A. O. (1943.) Tierärztliche Fragen aus der Tierzucht, insbesondere über künstliche Besamung. **[Artificial insemination from the veterinary aspect.]**—*Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **51/49.** 341–346. 2236

This article begins with an account of the diseases encountered in the Ukraine by S. as Director of the Veterinary Research Institute in Kiev during the German occupation. The extent to which artificial insemination is carried out in the U.S.S.R. is discussed in detail, with several tables reprinted from Russian articles and texts. In 1937, 11,500,000 sheep and 700,000 cattle were inseminated, as compared with 100,000 and 20,000 respectively in 1930. For 1940 it had been planned to inseminate 450,000 horses and 2,500,000 cattle. By 1940 the conception rate for artificial insemination of mares was 92·2% and for cattle 96%. By careful technical procedures it has been possible to inseminate as many as 15,000 ewes from a single ram during the breeding season, producing 14,944 lambs. The method was being used to increase enormously the number of fine-wool sheep. There are many artificial insemination centres staffed by lay personnel given a two or three months' intensive course of training. In the Kiev province 120 centres were planned for cattle, 20 for horses and 12 for sheep and about half this number were already working when the Germans occupied the area.

S. praises the Russians for the organization of their artificial insemination service but considers that their efforts to increase the animal population by this means have far outstripped the measures to maintain health and improve constitution. There are insufficient veterinarians to supervise the work and S. suggests that the centres need a veterinary staff which can carry out research and control the quality of the animals used to provide semen.

There are no detailed references but most of the figures are taken from the work of Milovanov and from a handbook for workers at such centres published in Moscow in 1938.—E. G. White.

Götze, R., & Rosenberger, G. (1944.) I. Vortrag. Besamungsversuche bei Rindern und Pferden. II. Vortrag. Durchführung der künstlichen Besamung bei Ziegen. **[I. Artificial insemination in cattle and horses. II. Artificial insemination in goats.]**—*Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **52/50.** 117–121 & 121–127. 2237

The place of artificial insemination in the German breeding policy is discussed [see also Götze—*V. B.* **13.** 105]. Since 1942 the method has been given trial under practical conditions at centres in N.W. Germany. The work at these centres is described in detail and, in

the case of horses and goats, full descriptions are given of the procedures adopted for collection, storage and intromission of semen.

I. The first centre for the insemination of dairy cattle started operations in June 1942 at Pinneberg (Holstein). Seven hundred farmers with 4,000 cows were enrolled in a society, using 5–8 bulls provided in part by the state. Pregnancy diagnosis and the treatment of infertility were undertaken. A conception rate of 70–80% from one insemination has been attained, an improvement of 10% as compared with previous results from natural mating. Work with horses is carried out at the Hanover Veterinary School. Work is still in an experimental stage, but the authors emphasize the value of artificial insemination in connexion with the work of a clinic catering for infertility in mares. Inseminations are repeated several times, from the time when ovulation is imminent, until the end of heat, the course of events in the ovaries being followed by rectal palpation. This gave satisfactory results with mares having histories of infertility, but which were free from signs of disease. Of 11 such mares, barren for two years or longer, six became pregnant without further treatment.

Stored semen has proved fertile up to 36 hours after collection. The best conditions for storage, judged by persistence of motility (48–240 hours) are given by fourfold dilution with a solution containing 5% glucose and 1·5% egg-yolk cooled to 2°C. Horse serum may be used in place of egg-yolk.

II. An insemination centre for goats has operated in Lower Saxony since 1942. In the small area covered, it replaces the system of communally owned studs, over which it has many advantages. Prominence is given to the possibility of eliminating congenital male infertility, for it is claimed that regular semen examinations will detect males that pass on the condition. Semen is diluted up to 16 times with a glucose-phosphate solution. 0·3 ml. is used for cervical insemination. 75% of inseminations are effective.—T. H. French.

Moore, C. R. (1944.) **Hormone secretion by experimental cryptorchid testes.**—*Yale J. Biol. Med.* **17.** 203–216. **2238**

It has long been known that in the stallion, bull and boar, in which one testicle has failed to descend into the scrotum, removal of the single descended testis is not followed by the usual castration changes; the behaviour in such animals indicates that the undescended testicle secretes hormone. The exact source of testicular hormone has given rise to much speculation and experiment; there is considerable disagreement among different groups of workers as to whether hormone secretion is restricted to the interstitial cells of Leydig, or whether hormone production, possibly of a second testicular hormone, takes place within the germinal epithelium. M. reports experiments on the hormone-secreting capacity of testes devoid of germinal epithelium. The results indicate that rats subjected to experimental cryptorchidism for varying periods between the ages of 20 and 80 days secreted less testicular hormone than litter mates with scrotal testes. The gonadotropic treatments were found to leave abdominal testes in a less favourable condition for subsequent secretion. This evidence suggested some participation at early ages in hormone secretion by the germinal epithelium, but there was no evidence to indicate that its possible contribution was different from the interstitial cell contribution. Experimental cryptorchidism for much longer periods and at older ages failed to modify the hormone-secreting performance in comparison with scrotal testes, in so far as seminal vesicle weight was an indication; periods of abdominal confinement for a year or longer did not appreciably interfere with hormone secretion in comparison with litter-mate normals.—N. J. Scorgie.

Appleton, A. B. (1944.) **Segments and blood-vessels of the lungs.**—*Lancet.* **247.** 592–596. **2239**

In A.'s opinion, there is a need for a comprehensive survey of the individual variations in the extent of the bronchopulmonary segments and in the pattern of the broncheal tree in order to interpret the individual as contrasted with the generalized or average lung. The results obtained from the detailed dissection of the bronchi, arteries and veins of 100 lungs, 50 from each side, and from a study of the development of the lung in embryos of 9 mm. and upwards are presented and discussed, but the detailed observations are to be published elsewhere.—W. R. Muir.

See also absts. **2194** (ruminant digestion), **2195** (circulation, respiration, and body temperature), **2283** (pregnancy diagnosis), **2294** (coprophagy in rabbits).

POISONS AND POISONING

Steyn, D. G. (1944.) **Water-poisoning of live-stock.**—*Fmg S. Afr.* **19.** 388–390. **2240**

This article deals only with subterranean water supplies containing salts in toxic proportions. The salts are usually present in the form of carbonates, bicarbonates, sulphates, sulphides, chlorides and nitrates. Saline waters are common in the dry parts of the country such as the north west and south west of South Africa. Pigs, fowls, horses and, in particular, human beings are affected, cattle and sheep to a lesser degree. A high percentage of nitrate may cause death rapidly but a variety of symptoms is seen in slow poisoning by saline water. Vomiting, chronic diarrhoea, excessive thirst and urination are seen; bladder and kidney stones are common. Fluorine in excess causes mottling of the teeth. A high percentage of lime, magnesium and sulphates disturbs the mineral metabolism of the body and predisposes to pica; the animals may develop stiffness or botulism.—E. M. R.

Wilford, B. H., & Mott, L. O. (1944.) **Results of tests with domestic animals confined on pastures sprayed with natural cryolite.**—*J. econ. Ent.* **37.** 291. **2241**

During 1943, cryolite was substituted for lead arsenate in the Federal spraying programme for the control of the gypsy moth and the white-fringed beetle. Preliminary experiments were therefore carried out to determine its toxicity for livestock.

A 16-year-old mare, a 15-year-old gelding, two 2-year-old pregnant heifers and two 2-year-old rams consumed pasture sprayed with cryolite without ill effect. The chemical employed was natural cryolite (Na_3AlF_6), the preparation in use containing not less than 90% sodium fluoaluminate, with a net content of not less than 49% fluorine. It was applied to the pastures at the rate of 40 lb. per acre and was prepared for application by using 4 lb. of the dry powder in 6 gal. of water and adding 0·4 pint of linseed oil as an adhesive. Dosage of a single sheep with 8 oz. of cryolite in 2 quarts of water was also carried out without untoward effect.—Alastair N. Worden.

Steyn, D. G. (1944.) **Poisonous and non-poisonous**

algae (waterbloom, scum) in dams and pans.—*Fmg S. Afr.* **19.** 465–466. 2242

The eradication of toxic algae from water supplies is imperative to protect the health of man and animals. These algae require sunlight for their development and cannot grow in dark reservoirs. Copper sulphate is effective in their eradication but it is inadvisable to have it permanently in the water as it is harmful to fish and especially so to young fry. One treatment should cause the algae to disappear for a few months. Fish should be removed from goldfish ponds while the treatment is being applied as they are easily poisoned. For dams, 1 lb. of copper sulphate for 100,000 gal. is effective; if fish are present 1 lb. in 300,000 gal. should be used. For large dams the required amount of copper sulphate should be dragged in the water in sacks suspended from motor-boats which move to and fro until it is dissolved.—E. M. Robinson.

Griesbach, W. E., Kennedy, T. H., & Purves, H. D. (1945.) **Studies on experimental goitre. VI. Thyroid adenomata in rats on brassica seed diet.**—*Brit. J. exp. Path.* **26.** 18–24. [For previous parts, see *V. B.* **14.** 345.] 2243

In the experiments reported, prolonged continuous hyperplasia produced by the goitrogenic agent in a rape-seed diet [see *V. B.* **12.** 509] was found to lead to the formation of thyroid adenomata; these are illustrated in a series of photomicrographs. The repeated cycle of thyroid hyperplasia and involution, induced by alternation between rape-seed and non-rape seed diets, did not lead to the formation of colloid goitre or of thyroid adenomata.

It is believed, therefore, that the formation of adenomata is due to long-continued stimulation by excessive amounts of thyrotropic hormone rather than to the presence in rape-seed of any tumour-forming agent.

—A. N. Worden.

MacDonald, I. W. (1942.) **A "staggers" syndrome in sheep and cattle associated with grazing on *Phalaris tuberosa*.**—*Aust. vet. J.* **18.** 182–189. 2244

The occurrence is recorded of a "staggers" syndrome in sheep and cattle grazing on pastures consisting almost exclusively of the perennial grass *Phalaris tuberosa*. The disease appears during the early stages of growth following the first rains after the dry season and is similar to "staggers" caused by the ingestion of a number of other plant species, in particular to that produced by perennial rye grass (*Lolium perenne*). The restriction of the disease to so few properties where the grass is grown has suggested that the chemical nature of the soil or a soil deficiency may play some part in its aetiology.

The symptoms tend to be precipitated by shock and usually appear after 1–3 weeks on the affected pastures. Removal from the pasture may bring about complete recovery in mildly affected animals after a few weeks. The chief abnormality is incoordination of gait, while nervous excitability is prominent and respiratory distress may also be evident. After a period of rest the nervous symptoms disappear.

Changes found P.M. were variable, the most constant lesions being subendocardial haemorrhages. Microscopic examination revealed a degeneration of certain tracts of the spinal cord and haemosiderosis of the liver, spleen and kidneys was present in varying degrees.

No treatment for affected sheep is known, but the adoption of such preventive measures as controlled grazing with access to pastures not containing *Phalaris* and ensuring that an adequate mixed diet is always available to the stock will prevent losses.—R. L. Reid.

Marais, J. S. C. (1943.) **The isolation of the toxic principle "potassium cymonate" from "Gifblaar" *Dichapetalum cymosum* (Hook) Engl.**—*Onderstepoort J. vet. Sci.* **18.** 203–206. 2245

Dichapetalum cymosum, one of the most poisonous plants of Southern Africa, is mainly distributed throughout the Northern and Western Transvaal, Bechuanaland and South West Africa. M. describes in detail his technique for the isolation of the toxic principle at which various attempts had previously been made. He obtained a crystalline potassium salt, for which the name potassium cymonate is suggested, and found the M.L.D. for the rabbit to be 0·5–0·75 mg. per kg. body weight whether given *per os* or parenterally.—E. M. Robinson.

Mathews, F. P. (1944.) **The toxicity of Kallstroemia hirsutissima (carpet weed) for cattle, sheep, and goats.**—*J. Amer. vet. med. Ass.* **105.** 152–155. 2246

The habitat of the carpet weed, *Kallstroemia hirsutissima*, extends from Colorado to Arizona and from Kansas to central Texas, but its toxicity for ruminants has hitherto remained unsuspected.

In a Texas locality, a mixed herd of cattle developed a paralysis of the hind limbs and suffered some losses by death 12–14 days after transference from drought-stricken range to farm pastures where carpet weed was abundant. Other cattle similarly transferred, but to farm pastures containing no carpet weed, suffered no ill effects. The symptoms varied from a knuckling of the legs to complete inability to stand and in those animals able to stand the paralysis was intensified when they were driven. In the standing position, some animals exhibited dancing-like movements of the hind legs. The fore-legs were apparently unaffected and could be used by some animals to drag themselves about. The appetite remained normal. By the 14th day, 4 animals had died and 10 others out of a total of 54 showed well marked knuckling of the hind legs. Recovery took place within a few days when the cattle were transferred to pasture free from carpet weed, but the same illness recurred a fortnight later when the herd was placed on another pasture bearing an extensive growth of carpet weed.

Freshly gathered carpet weed was forcibly fed to a heifer, a sheep and two goats at the rate of 1–1½% of the body weight daily. The clinical picture of the field cases was most successfully duplicated in the sheep. One goat appeared to be very resistant to the toxic principle. The weed is unpalatable but apparently hungry range cattle will eat it; its toxicity has hitherto been unsuspected because the farm pastures are normally not grazed until late autumn, by which time the carpet weed has been killed by frost.—W. R. Muir.

See also absts. **2260** (toxicity of atebrin), **2267** (of D.D.T.), **2292** (sweet clover disease).

PHARMACOLOGY, THERAPEUTICS AND DISINFECTION

—. (1944.) **Penicillin. Annotated bibliography. Second series (No. 82-260), with supplemental references and cumulative author and subject indexes.** pp. 60. New York: Winthrop Chemical Company Inc. 8vo. 2247

This booklet consists of a second series of abstracts or references of papers dealing with penicillin. Its discovery, development and purification, methods of administration, modes of action and many other aspects of the drug are covered. A supplemental list of references and cumulative author and subject indexes are given.—E. M. J.

COLES, R. B., BARKER, A. N., ROBERTSON, E. A., & COWAN, S. T. (1945.) **Agar for local penicillin therapy.**—*Lancet.* **248.** 720–721. [Authors' summary copied *verbatim.*] 2248

Penagar is penicillin in semi-solid agar; its preparation, which is simple, is described. The penicillin remains active for at least a month at refrigerator temperature and diffuses readily from the agar when applied to the tissues. Penagar is clean to use and non-sticky, and can be packed in sterile bottles or collapsible tubes, each containing one dose. Its use as a primary application for wounds and as a urethral instillation is suggested.

ROMANSKY, M. J., & RITTMAN, G. E. (1944.) **Penicillin. 1. Prolonged action in beeswax-peanut oil mixture.**—*Bull. U.S. Army med. Dep.* No. 81. 43–49. [Extract from authors' summary copied *verbatim.*] 2249

1. Single injections of penicillin in beeswax-peanut oil mixture will produce and maintain levels of penicillin in the blood for seven to ten hours. 2. These mixtures have maintained their potency at room, incubator, and refrigerator temperatures for thirty to sixty-two days and show no signs of deterioration to date. 3. No abnormal reactions, locally or constitutionally, have been produced by this mixture.

PECK, S. M., & HEWITT, W. L. (1945.) **The production of an antibiotic substance similar to penicillin by pathogenic fungi (dermatophytes).**—*Publ. Hlth Rep., Wash.* **60.** 148–153. 2250

Several species of fungi occurring in lesions of dermatophytosis were found to produce antibiotics. A strain of *Trichophyton mentagrophytes* isolated from a patient's arm was most thoroughly investigated and found to produce a factor resembling penicillin in the range of its activity and in its sensitivity to acid, alkali, temperature and enzymes.—E. BOYLAND.

LUNDQUIST, N. S., & PHILLIPS, P. H. (1945.) **Some observations on the effect of sulfa drugs on blood plasma ascorbic acid levels in calves.**—*J. Dairy Sci.* **28.** 139–145. 2251

The administration of 2 g. succinylsulphathiazole or 15 g. sulphathiazole per day to new-born calves raised the blood plasma ascorbic acid level during the first week of life. Sulphapyridine in doses of 10–15 g. did not raise the blood ascorbic acid concentration unless it was previously subnormal. Dosing with 3 g. of chlorobutanol daily also raised the blood plasma ascorbic acid content of heifers. The chlorobutanol effect was independent of that of succinylsulphathiazole but the administration of chlorobutanol after dosing with sulphathiazole reduced the blood ascorbic acid concentration.—E. BOYLAND.

KOLLATH, W., & RAABE, F. (1943.) Ueber das Verhalten der Blut- und Gewebsleukozyten bei Streptokokkeninfektion und Prontosilgaben. **[Behaviour of blood and tissue leucocytes in streptococcal infection treated by prontosil.]**—*Zbl. Bakt. I.* (*Orig.*). **149.** 434–440. 2252

Virulent strains of streptococci infecting mice cause an increase in the number of leucocytes in the blood and a decrease in those in the bone marrow; less virulent strains have less effect on the blood leucocytes. The treatment of infected mice with prontosil appears to reduce the virulence of the infecting organisms.

It is suggested that streptococci contain a "pre-virulent" substance which becomes virulent in the tissues. This conversion is inhibited by prontosil. The virulent substance inhibits the penetration of leucocytes from the blood vessels.—E. BOYLAND.

KNODT, C. B., & PETERSEN, W. E. (1944.) **Water as a vehicle for the infusion of sulfanilamide in the treatment of mastitis.**—*J. Amer. vet. med. Ass.* **105.** 212–214. 2253

Following the work of KAKAVAS *et al.* [*V. B.* **13.** 404] who used sulphanilamide in oily suspension, and the observations of PETERSON & RIGOR (1932) who found distilled water to have only a very slight deleterious physiological effect on the udder, the authors used distilled water as a vehicle for the infusion of sulphanilamide; it is more soluble in water than other agents commonly used for the treatment of mastitis.

Freshly prepared 10% suspensions were used, 600 ml. per quarter being the standard dose. By means of a flutter-valve injection apparatus, the sulphanilamide was kept in suspension during injection by the air entering the base of the flask. The method was used in three acute and two chronic cases of mastitis associated with the presence of coliform organisms. Clinical and bacteriological recovery was claimed. One acute and four chronic streptococcal cases were also successfully treated. In some cases, two infusions were necessary. The success claimed with sulphanilamide against coliform infections is noteworthy. The authors conclude that a wider trial is justified.—R. M. ARNOLD.

FELDMAN, W. H., HINSHAW, H. C., & MANN, F. C. (1944.) **The effects on experimental tuberculosis of 4,2′-diaminophenyl-5′-thiazolesulfone [promizole]: A preliminary report.**—*Proc. Mayo Clin.* **19.** No. 2. 25–33. 2254

Promizole was given to g. pigs infected with human tubercle bacilli (strain H 37 RV) by adding 0·5% to the animals' diet. It was as effective as promin in increasing the survival time and reducing the severity of lesions. A beneficial effect was found even when treatment was delayed until 14 weeks after infection. The dosage used resulted in a blood concentration of 2·3 mg. of the drug per 100 ml.—E. BOYLAND.

HINSHAW, H. C., FELDMAN, W. C., & PFEUTZE, K. H. (1944.) **The clinical administration of 4,2′-diaminophenyl-5′-thiazolesulfone [promizole] in tuberculosis: A preliminary report.**—*Proc. Mayo Clin.* **19.** No. 2. 33–36. 2255

A series of 56 TB. patients were given 10–16 g. promizole orally per day. Blood concentrations of 1·5–4·2 mg. per 100 ml. were attained and 80% of the ingested drug appeared in the urine. Promizole appears to be tolerated better and have less haemotoxic action than diaminodiphenyl sulphone or promin. The clinical results cannot yet be evaluated.—E. BOYLAND.

SANTIVANZEZ, M. J. (1945.) **The *in vivo* and *in vitro* activity of streptothricin against *Brucella abortus*.**—*Thesis, Cornell.* pp. 74. 2256

S. discusses briefly the properties of antibiotics in general and gives a short summary of those antibiotics that have been described in the literature.

The streptothricin used in these experiments was in the form of streptothricin hydrochloride and was furnished by Merck and Co. The product is an antibiotic derived from *Actinomyces lavendulae.*

Experiments were conducted to determine the *in vitro* and *in vivo* activity of streptothricin against *Br. abortus.* In the *in vitro* studies, the activity of the product was determined by plating the antibiotic-bacteria suspensions after various time intervals and by density determinations on the Klett-Summerson photoelectric colorimeter. Activity was determined at pH 6·5, 7·0, and 7·5. In *in vivo* studies, the g. pig was used as the test animal. In each of the ten experiments, nine g. pigs were infected intraperitoneally with *Br. abortus.* In five of the experiments each animal received

a single injection of 100,000,000 organisms; the others received a single injection of 300,000,000 bacteria. Six of each lot of nine infected animals were treated with streptothricin injected subcutaneously; three were left as controls. The treated animals received varying doses of the antibiotic which was given simultaneously with the infective dose in some experiments, and three weeks later in others.

In vitro, the product is markedly bactericidal, especially at pH 7·5 and even in dilutions of 0·5 units per ml.

In vivo, all g. pigs showed negative spleen cultures and high agglutination titres five weeks after receiving a single dose of 5,000 units at the time of infection. Similar results were obtained with a single 10,000 unit dose. The injection of 10,000 units in five 2,000 unit doses at intervals of two hours, starting at the time of giving the infective dose, afforded greater protection than the injection of single large doses. The injection of 5,000 units, 10,000 units, or graduated doses, three weeks after infection, afforded no protection against the infection.

Streptothricin tends to produce abscesses at the point of injection. It has a cumulative toxic effect, acting particularly against the kidneys.—H. L. G.

NAGLER, F. P. O. (1945.) **Treatment of experimental gas gangrene due to *Clostridium welchii* with penicillin and antitoxin.**—*Brit. J. exp. Path.* **26.** 57–63. **2257**

G. pigs were infected by intramuscular injection of suspensions of *Cl. welchii* and treatment was started six hours later. Whereas treatment with antitoxin or penicillin alone was ineffective, combined treatment saved most animals infected with 1,000 lethal doses. The dosage recommended for the treatment of human infections corresponds to 4,000,000 units of penicillin and 150,000 units of antitoxin over a three-day period. Combined treatment with antitoxin and sulphadiazine was not so effective.—E. BOYLAND.

KINGMAN, H. E., & STANSBURY, W. M. (1944.) **Treatment of necrophorus infections of cattle with sulfapyridine.**—*N. Amer. Vet.* **25.** 671–674. **2258**

Cases of necrotic laryngitis in cattle were treated with 1 grain of sulphapyridine per lb. body weight given *per os*, some cases also receiving a local application of a paste of sulphapyridine mixed with glycerol. In a few cases sulphapyridine sodium was given intravenously. It is advisable to commence treatment as early as possible. The treatment was successful in 21 cases out of 30. Toxic manifestations of the drug were seen in some cattle. A total of 150 cases of interdigital phlegmon have been successfully treated by the surgical removal of necrotic tissue followed by application of a sulphapyridine-glycerol paste. Wounds infected with *Actinomyces necrophorus* will not heal if they are covered with impervious dressings. In cases with open joints, sulphapyridine was injected into the joint and given *per os* and the surface was painted with iodine.—E. B.

ALBERT, A. (1944.) **Kationic chemotherapy, with special reference to the acridines.**—*Med. J. Aust.* March 18th. 245–248. **2259**

The mode of action of chemotherapeutically active substances is discussed briefly. The virtues and limitations of the frothing kationics and the acridine compounds are discussed in detail. The great virtue of all the amino acridines is that they are not inactivated in the presence of pus. A very useful table classifying antiseptics is included.—D. F. STEWART.

BARLOW, O. W., AUERBACH, M. E., & RIVENBURG, H. (1945.) **Studies of the pharmacology of atabrine on mice, rats, ducks and dogs.**—*J. Lab. clin. Med.* **30.** 20–31. **2260**

Quinine and four different salts of atabrine have all about the same toxicity (L.D.50, 0·7–0·9 g. per kg. body weight) by oral or subcutaneous injection in mice. When large oral doses are given to rats over a long period, high concentrations of atabrine are deposited in the liver; in one case there were 458 mg. atabrine per 100 g. of liver tissue when only 0·3 mg. per 100 ml. were present in blood. Injury to liver and other organs rapidly healed when medication was discontinued. Continued administration reduced the rate of growth but had no significant effect on the blood of rats; the effect on growth was not ameliorated by sodium bicarbonate administration. Atabrine of American manufacture appeared to be slightly less toxic than material prepared from German intermediates.—E. B.

*VAN DEN BRANDEN, F. (1941.) Action des vapeurs ed néoarsphenamine sur le rat blanc infecté de Trypanosoma "brucei". **[Action of the fumes of neoarsphenamine on white rats infected with *Trypanosoma brucei*.]**—*Bull. Soc. Path. exot.* **34.** 209–215. [Abst. from abst. in *Zbl. Bakt. I.* (*Ref.*). **142.** 300.] **2261**

The author treated white rats infected with *T. brucei* with neoarsphenamine vapour in order to find a quick and comparatively inexpensive method of estimating biologically the efficiency of the neoarsphenamines. The method is not to be recommended since there was great variation in the effect of neoarsphenamine vapour on trypanosomes.—J. K. H. WILDE.

EAGLE, H. (1945.) **A new trypanocidal agent: γ-(*p*-arsenosophenyl) butyric acid.**—*Science.* **101.** 69–71. **2262**

The sodium salt of γ-(*p*-arsenosophenyl) butyric acid can be sterilized by autoclave and kept in sealed ampules for over a year. In experimental animals it has been shown to be trypanocidal for *Trypanosoma equiperdum*, *T. rhodesiense*, *T. gambiense* and *T. cruzi*; it is also trypanocidal to arsenic-fast strains. It is now being used in the treatment of sleeping sickness in West Africa in doses of 0·25–0·5 mg. per kg. body weight, given twice or thrice weekly, or daily to a total of 6–24 injections. Some 200 treated cases have shown a promising response, but observations have been maintained for only a few months.

The drug has also been used experimentally in horses, sheep and cattle infected with trypanosomes, horses and sheep showing marked improvement. In cattle, organisms persisted in the blood. [The species of trypanosomes is not given.]—U. F. RICHARDSON.

EAGLE, H., HOGAN, R. B., DOAK, G. O., & STEINMAN, H. G. (1944.) **The therapeutic efficacy of phenyl arsenoxides in mouse and rabbit trypanosomiasis (*Tryp. equiperdum*).**—*Publ. Hlth Rep., Wash.* **59.** 765–783. **2263**

A series of 54 derivatives of phenylarsenoxide and nine phenylarsonic acids were tested for trypanocidal action (against *T. equiperdum*) *in vitro* and some were tested against the same trypanosome in mice. Agreement between the *in vitro* and *in vivo* tests was sufficiently good to make the former an effective screening test. The less active compounds were relatively more active in mice than *in vitro*. The phenylarsenoxides gave better chemotherapeutic indices than the arsonic acids in treatment of trypanosomiasis in mice and rabbits. The introduction of acidic groups into the molecule decreased trypanocidal activity, while amide-substituted derivatives were less toxic and actively trypanocidal. The most promising compound, however, appears to be *p*-arsenosophenylbutyric acid and this compound is being tested against human infections.—E. BOYLAND.

KAZANSKIĬ, I. I. (1943.) Terapiya nuttallioza i piroplazmoza preparatom C-55 i tripanblau. **[Treatment of babesiasis and piroplasmosis with S55 and trypanblue.]**—*Veterinariya, Moscow.* No. 1. pp. 28–32. **2264**

Acaprin and trypaflavine are complex and expensive chemical preparations not easily mass produced. Their therapeutic index is low and they may have acute secondary effects.

Trials were made with newer, chemically simpler and less expensive preparations such as S55, pirocide and buttercup extract. The latter gave negative results. The subcutaneous injection of S.55 proved unsatisfactory and only the intravenous method was used.

When two groups of foals, one group infected with *Babesia equi* and the other having a mixed infection of *B. equi* and *Piroplasma caballi* were tested, only *B. equi* responded to S55.

When a group of foals with a mixed infection of *B. caballi* and *B. equi* was treated with both S55 and trypanblue there was evidence of an antagonism between *B. equi* and *B. caballi* in as much as when *B. equi* was abundant in the blood stream B. *caballi* was usually absent and *vice versa*. Mixed infections may be treated with S55 and trypanblue given either separately or in a mixed solution but a combination of S55 and trypanblue does not prevent relapse after 2–15 days.

In light infections with *B. equi*, S55 in doses of 0·005 g. per kg. body weight was effective. In heavy infections three doses are necessary.—E. CHERKESI.

LARSON, C. L., & GRIFFITTS, J. J. (1945.) **A comparison of the effect of penicillin and immune serum in the treatment of experimental leptospirosis in young white mice and in hamsters.**—*Publ. Hlth Rep., Wash.* **60.** 317–323. **2265**

The administration of eight doses of penicillin was as effective as immune serum in treating experimental infections of *Leptospira icterohaemorrhagiae* in mice and *L. canicola* in hamsters, if treatment was commenced within three days of infection.—E. BOYLAND.

*—. (1943.) Bekämpfung der Räude bei Einhufern ausserhalb von Gaszellen. **[Treatment of mange in equines].**—*Dtsch. Tierärztebl.* **10.** 20. [Abst. from abst. in *Ber. Vet.-Med.* **71.** 93.] **2266**

Provided that the treatment is carefully carried out, "durosept" can be used to cure the most severe types of mange. It is especially recommended for cases, such as those with chronic lung disease, where the sulphur dioxide gas chamber treatment cannot be used. The treatment is as follows. On the 1st and 2nd days the animals are completely washed with a 3% solution, and on the 3rd day the infested areas are painted with undiluted "durosept". On the 13th day the animals are again washed with the dilute solution and are given another application of the undiluted "durosept" on the following day. All animals are then thoroughly examined, and in cases where infested areas still remain the whole procedure is repeated.—J. B. CRAGG.

SMITH, M. I., & STOHLMAN, E. F. (1945.) **Further studies on the pharmacologic action of 2,2 bis (p-chlorophenyl) 1,1,1 trichloroethane (DDT).**—*Publ. Hlth Rep., Wash.* **60.** 289–301. **2267**

Data are presented on the distribution, storage and elimination in the urine of D.D.T. in acute and chronic poisoning in rabbits, cats and a dog. When D.D.T. is given to rabbits orally in olive oil, in daily doses of 50 mg. per kg., the animals usually die 15–25 days later, with characteristic nervous symptoms. At necropsy, coagulation, necrosis and hyaline degeneration of the liver are prominent features.

Organic chlorine can be demonstrated in the urine of rabbits, cats and dogs receiving D.D.T. long in advance of any recognizable symptoms of poisoning.

Studies on the action of a series of hypnotics and related compounds in acute D.D.T. poisoning in rats indicate good antidotal effects from urethane and to a lesser extent from dilantin.—W. MOORE.

WHITE, W. C., & SWEENEY, T. R. (1945.) **The metabolism of 2,2 bis (p-chlorophenyl 1,1,1 trichloroethane (DDT). I. A metabolite from rabbit urine, di (p-chlorophenyl) acetic acid; its isolation, identification, and synthesis.**—*Publ. Hlth Rep., Wash.* **60.** 66–71. **2268**

D.D.T. when fed to rabbits yields di (*p*-chlorophenyl) acetic acid in the urine. The isolation and synthesis of this metabolite are described.—W. MOORE.

STOHLMAN, E. F. (1945.) **Preliminary report on the identification of 2,2 bis (p-chlorophenyl)-1,11, trichloroethane (DDT) in the excreta of poisoned rabbits.**—*Publ. Hlth Rep., Wash.* **60.** 350–353. **2269**

Crystalline D.D.T. and a water-soluble fraction containing organic chlorine were isolated from the urine of rabbits which had been given D.D.T. by the mouth. Crystals containing organic chlorine were also recovered from the faeces.—W. MOORE.

ALEXANDER, P., KITCHINER, J. A., & BRISCOE, H. V. A. (1944.) **Inert dust insecticides. Part I. Mechanism of action. Part II. The nature of effective dusts. Part III. The effect of dusts on stored products pests other than** *Calandra granaria*.—*Ann. appl. Biol.* **31.** 143–149, 150–156 & 156–159. **2270**

I. Dusts do not depend on any chemical activity for their lethal action on *Calandra granaria* because some highly inert substances, such as diamond, are very effective. Effective dusts increase the rate of evaporation of water from insects to the air and the relative killing powers of different dusts run parallel with their capacities for promoting evaporation.

II. The chief factors influencing the efficiency of an inert dust as an insecticide against grain weevils are particle size and hardness. Particles larger than 15μ are without action and effectiveness increases as the size is reduced from 10μ to about 2μ where a maximum effectiveness is reached. Materials softer than calcite are generally ineffective and effectiveness increases with hardness. The method of preparation of dusts is also important; some dry-ground powders are inferior to wet-ground and some dusts can be considerably altered by superficial chemical treatment.

It is suggested that clean crystalline surfaces of effective dust can absorb or in some way penetrate the water-resistant epicuticle and so promote evaporation of water.

III. Inert dusts were found effective as insecticides against both larvae and adults of a variety of insects infesting stored products. The order and magnitude of effectiveness of a series of dusts differs for different species, but the mechanism of action appears to be the same, *viz.* promotion of evaporation, leading to death by desiccation.—W. MOORE.

COMPTON, L. S. (1944.) **Thiamin hydrochloride therapy.**—*Cornell Vet.* **34.** 285–288. **2271**

Six cases of acetonaemia in the dairy cow were treated by the subcutaneous administration of 300–500 mg. of thiamine hydrochloride. Three recalcitrant cases received a second similar dose 1–4 days later, but all animals recovered within periods ranging from three hours to two days. Azoturia in a five-year-old working horse responded to the subcutaneous injection of two 500 mg. doses of thiamine hydrochloride within two days, with the disappearance of typical symptoms within 90 minutes.—ALEX. B. PATERSON.

*Rohland, M. (1943.) Beiträge zur klinischen Diagnose und Therapie der Azetonämie der Rinder. **[Clinical diagnosis and therapy of acetonaemia in cattle.]**—*Inaug. Diss., Hanover.* [Abst. from abst. in *Dtsch. tierärztl. Wschr./Tierärztl. Rdsch.* **51/49.** 332.] **2272**

R. distinguishes between a nervous and a digestive type of acetonaemia in the dairy cow, and stresses the importance of detecting acetone in the excretions and secretions when making a differential diagnosis of the conditions.

Two groups of cattle were treated, one by the subcutaneous injection of 20 ml. of "tonophosphan" and 3 ml. of lentin plus 40 g. anhydrous $Ca(ClO_3)_2$, 200 g. $NaHCO_3$ and 150 g. glucose administered *per os*, and the other by the subcutaneous and intravenous injection of glucose solution and the subcutaneous administration of ephedralin. The latter method of treatment gave better results; both methods required at least ten days before cure was effected, and several cases in both groups required repetition of treatment.—Alex. B. Paterson.

Kliewe, H. (1942.) Uber die Entseuchung mit bewegter Heissluft. **[Disinfection by hot air currents.]**—*Z. Hyg. InfektKr.* **123.** 725–733. **2273**

K. carried out tests on the disinfection of large quantities of clothing in hot air ovens, using what is described as the "Vondran" apparatus. He gives details of temperature requirements for this purpose. An interval of 1½ hours at 100°–110°C. was necessary for non-sporulating organisms. Sporulating organisms could not be killed without damaging the materials. K. describes tests on the sterilization of laboratory glassware and instruments in a hot air oven. —O. D. James.

See also abstr. **2230** (prolan in bovine sterility), **2297** (history of chemotherapy).

HYGIENE, PUBLIC HEALTH AND VETERINARY SERVICES

Kjos-Hanssen, B. (1944.) Kolibakteriene i konsummelken. **[*Bacterium coli* in market milk.]**—*Norsk VetTidsskr.* **56.** 229–239. **2274**

This is a general discussion based on the author's milk control work at Stavanger, Norway. His experience indicates the desirability of qualitative tests on raw and pasteurized milk, as an aid to the regular production of satisfactory milk with a low *Bact. coli* content.—J. E.

Pullinger, E. J. (1944.) **The milk industry of South Africa.**—*J. S. Afr. vet. med. Ass.* **15.** 39–63. **2275**

This article is a survey of the existing structure of the industry in South Africa, which is controlled by a number of independent bodies and for purposes of state control is divided into two sections dealing with fluid milk and factory milk. P. discusses the state control of these two types of milk, shows how inadequate the pasteurization processes are and considers the shortcomings of the present control system. The problems include farming with inferior, unhealthy and underfed cows, total solids in the milk being under average, dairying where no cheap source of food is available, transport difficulties, the high percentage of souring and the excessive distribution costs.

P. discusses the health of farm stock and shows what a major part TB., bovine contagious abortion and mastitis play in causing deterioration in dairy animals.

Losses due to souring are very high and are due to bad dairy hygiene, bad marketing and bad handling by distributors. P. stresses the failure of the existing system to produce any standardization of the hygiene of production or to standardize the keeping quality of the milk.—E. M. Robinson.

Hillesund, C. M. (1944.) Reduktaseprøven. **[The reductase test.]**—*Norsk VetTidsskr.* **56.** 343–350. **2276**

H. criticizes the old Bartel and Orla Jensen form of the reductase test which is in use in dairies throughout Norway and advocates the use of Skar's inversion method. England and Denmark have given up the Bartel and Orla Jensen method and employ Wilson's method, which he also criticizes.

The old form of the test is unreliable because many of the bacteria are collected in the cream layer; this greatly prolongs the reduction time. Milk samples vary much in regard to the rate of rising of the cream so that milk from Jersey cows and mastitis milk will be too leniently judged.

Various means have been tried to prevent or delay the rising of the cream. Skar suggested the simple method of inverting the milk samples at regular intervals during the test. Wilson was the first to adopt this suggestion. In his method test tubes are tightly stoppered but not completely filled with milk. The stirring up of the milk during the test takes place with the aid of the air left in the tubes. Oxygen is thus mixed with the milk during inversion; this may prolong the reduction period and alter the conditions for bacterial growth in the milk. In Skar's method the test tubes are filled full and tightly plugged with an india rubber stopper. The sample is stirred by means of small glass beads in the tubes, which are narrow and placed in a stand specially adapted to their use. Stands can be fixed together so that one can easily invert 60–80 tubes at a time. At first, Skar inverted every 10 minutes but now he considers every half hour to be sufficient.

This method has been used by the Oslo Public Health Department since 1941 and the tests are paralleled by bacterial counts done on trypsin-hydrolyzed acid casein.

He calculates from material available at the Oslo Public Health Department that the number of bacteria which correspond to the various reduction times according to Skar's method are as follows: reduction time over 5½ hours, under 80,000 bacteria per ml.; 2–5½ hours, 80,000–800,000 bacteria; ½–2 hours, 800,000–4 million bacteria; under ½ hour, over 4 million bacteria.—M. E. Robertson.

Cohrs, P. (1943.) Fleischhygienische Tuberkuloseprobleme. **[Meat hygiene problems concerning tuberculosis.]**—*Z. Fleisch- u. Milchhyg.* **53.** 131–135. **2277**

Under the Reich law of 1940 concerning meat inspection, the whole carcass may be inspected only when there are miliary tubercles in the lungs and kidneys; consequently early generalized TB. with no visible lesions is missed. The bacilli may be held in the blood circulating in the muscles and in the muscle tissue but cannot develop there. They cannot be demonstrated in the blood during life but may be present in the heart blood after death; it is suggested that they pass into the blood stream during extreme pain.

Meat inspectors should differentiate infection of the type in which lesions are present from the type where they have not yet developed. The law should be amended to give inspectors authority to examine the carcass in greater detail when necessary.—S. M. G.

Modig, J. (1940.) Något om våra ladugårdars byggnadssätt, med hänsyn till deras uppgift att

skydda djurens hälsa och välbefinnande. [**Value of our byres in preserving the health of cattle housed therein.**]—*Svensk VetTidskr.* **45.** 85–100 & 100–131. 2278

M. discusses in detail the principles of the situation and construction of stables and stalls. A well drained and sheltered site which faces south is desirable and building material should be long-lasting and warm. The merits of wood, stone and concrete are described. The common disadvantage of concrete is its tendency to coldness and dampness and to minimize this it has been found necessary to build double walls having an interspace of not less than 17·5 cm., filled with dry sawdust or wood charcoal. Another arrangement is the so-called Nopsa wall consisting of a triple wall built of pre-cut concrete slabs with two interspaces, 12·5 cm. wide; the inner space only is filled with non-conducting material. The roof or ceiling should also be double and provided with insulating material. The floor must be impervious to water, so must be constructed of concrete resting on a layer of insulating material, such as charcoal, stones or broken bricks, etc., which should be 10 cm. deep, except near the walls, where it should be deeper (15–20 cm.). It is also advantageous for warmth to have the floor well above the bottom of the walls.

The roof should be 210–240 cm. above the level of the floor and needs to be higher in byres with a large floor area than in small ones. The windows should be placed high in the walls. In northern Sweden it is the rule to fit double windows. Unless the inner window is shut tight when the outer one is closed, frost formation is likely on the inner surface of the inner window as well as on the outer one; glycerin smeared on the panes prevents frost, the removal of which is described. Doors must be cold-proof; the best type is a double door built in one piece with a space 7½ cm. wide, filled with chaff or short-cut straw. The cavity is left open at the top for filling and is then boarded over.

The standings and manure channel are discussed at length. M. emphasizes that the vertical drop from the standing to the channel floor should be at least 20 cm. For a district with a limited supply of bedding straw, he advocates a channel with the floor tilted up in its anterior half; this assists the drainage of urine.

An important point influencing the cow's stance is the position of the feeding trough. If it is at floor level the cow is forced to step back into the dung channel, but if it is raised about 35 cm., a more comfortable feeding position results. The length of the standing depends on the size of the cows; different breeds require different lengths of stance. Types of yoke for restraining the cows in their places are discussed, but not illustrated. A new idea for making the cow stand properly is described. A slope leads up from the floor of the standing to the balustrade forming the lower edge of the feeding trough; this slope prevents the cow from stepping forward excessively but necessitates a raised trough.

Partitions of steel tubing fixed in the concrete forming the floor of the standing are advocated. A single loop 60–80 cm. high and 40 cm. wide suffices. A concrete wall or bar 5 cm. high and 5 cm. wide separating each standing is also advised; this prevents fluids (infected milk, etc.) from running sideways from one standing to another.

The risk of the spread of infection by a continuous feeding trough counteracts its general handiness. To obviate this difficulty, M. has designed iron, bin-like troughs which are mounted so as to turn over and outwards when not actually in use.

A new design of automatically controlled drinking bowl with all working parts covered is described with the aid of a line drawing.

Some principles for the siting of isolated calving boxes are reviewed. There should be no opportunity for waste fluids to run out from the floor to the outside ground, unless, of course, they can be caught in a drain gulley trap immediately outside. Ventilation is discussed, with reference to conduits through the wall and air extractor fans. An adroit way of preventing overcooling of the byre by the former is to use regulated inlets drawing air from the loft by a method illustrated.

Finally, a plan to conform with a government order to the effect that the manure pit must be separated from the byre is described and depicted. The prescribed gap is occupied by hay or straw storage rooms which help to insulate the byre, a short covered passage extending between byre and pit.—J. E.

Polyakov. (1943.) Profilaktika paratifa telyat v karavaevskom plemsovkhoze. [**Prophylactic measures against calf paratyphoid on the Karavaevskii pedigree cattle farm.**]—*Veterinariya, Moscow.* No. 1. pp. 19–20. 2279

This is an extract from S. I. Shteĭnman's book on "How the prize Karavaev herd was created", which was published in 1942 and in which Shteĭnman describes a method of raising calves in unheated cowhouses with a temperature falling to −15°C. in winter.

Calving takes place in cowhouses with temperature falling to 6°C. and the newly born calves are kept in special cages for 2–3 months with a baize blanket leaving the head, belly and legs uncovered, as a sole protection. In very severe weather, a straw roof is rigged up over the cage for additional protection. In the winter of 1940, with the outside temperatures at −49°C., the temperature in the cowhouse remained at −15°C. There has been only one case of frost-bite in seven years.

This method of early hardening makes the calves resistant to disease and infection and they increase very satisfactorily in weight (850–1,100 g. [? daily]). There has been no winter loss of calves, no case of paratyphoid for a decade and joint-ill has been completely eliminated. In addition, there is an annual saving in fuel amounting to 50,000–60,000 roubles.—E. Cherkesi.

Dowell, A. A. (1943). **A study of livestock trucks at Minnesota markets.**—*Misc. Rep. Minn. agric. Exp. Sta.* No. 2. pp. 16. 2280

The objectives of this study were to determine the condition and operating efficiency of lorries at public and private markets. Data were collected at various markets and packing plants as to type, ownership, age, condition, and carrying capacity; and also as to the average market and return loads.—J. S. S. Inglis.

Ostertag, H. (1942.) Über die hygienische Bedeutung des Grossstadtstrassenstaubes und die darin enthaltenen Mikroorganismen. [**Micro-organisms in street dust of large towns.**]—*Z. Hyg. InfektKr.* **123.** 698–708. 2281

The examination of over 100 samples of street dust for its bacteriological content was undertaken from the viewpoint of human health, but the findings are also of importance to comparative medicine.

Among the bacteria recovered were streptococci, staphylococci and anaerobes including *Clostridium tetani*. The presence of the latter was ascribed partially to its excretion in horse dung; this was substantiated by the higher percentage present in samples from streets where horses normally worked.

The possible spread of virus infections by means of street dust is discussed and details are given of the dissemination of foot and mouth disease in German cities by means of infected vehicles. Details of control methods, disinfection, and the resistance of the virus under street conditions are given.—O. D. James.

SUKHORUKOV, S. (1943.) Rol' veterinarnoĭ sluzhby v sovkhozakh. [**Veterinary services on Soviet state farms.**]—*Veterinariya, Moscow.* No. 1. pp. 5–7. **2282**

This article deals in general terms with the insufficient technical training afforded personnel, the bad sanitary conditions and disregard of veterinary regulations etc. on some Soviet state farms. Details are given of five instances in the provinces of Chelyabinsk and in the Kirghiz S.S.R.—E. CHERKESI.

See also absts. **2114** (TB. control), **2207** (pasteurization and food value of milk).

TECHNIQUE AND APPARATUS

MAYER, D. T. (1944.) **A comparative study of two biologic and two chemical techniques of pregnancy diagnosis in the mare.**—*Amer. J. vet. Res.* **5.** 209–214. **2283**

The blood and urine of 94 mares were examined 3–4 times during gestation by four different techniques, two, the blood-serum method and the urine method, being biological and utilizing female rats and the remaining two, the Cuboni method and the phenolsulphonic acid method, being chemical tests on urine. The serum test can be used from the 60th to the 90th day of gestation, the urine method from the 3rd to the 4th month and the phenolsulphonic acid method from the 3rd month onward.

Positive reactions were given by all methods from the 120th to the 250th day of gestation in 66 mares which were later reported foaled (100% correct diagnosis). The biological methods gave four false positive reactions (85% correct diagnosis) and the two chemical methods each one false positive reaction (96·4% correct diagnosis) in the 28 mares which did not foal. Many other miscellaneous cases giving positive biological reactions early in pregnancy gave negative chemical reactions in urine at a later date and the mares failed to foal; the discrepancy is attributed to abortion between tests. The blood serum test was the least accurate of the four tests, yielding only 82% correct diagnosis in both pregnant and non-pregnant mares. —ALEX. B. PATERSON.

*AGNELLO, V. (1940.) Sul potere favorente lo sviluppo dei batteri del sangue iperglicemico dei diabetici e dei diabetici tubercolari. [**Growth of tubercle bacilli on hyperglycemic blood.**]—*Riv. tisiol.* **13.** 361 [Abst. in *Amer. Rev. Tuberc.* **51.** No. 4. p. 59 of absts. copied *verbatim.*] **2284**

Basing his experiments upon the work of other authors who found that addition of blood to a culture medium is favorable for the growth of tubercle bacilli, the author confirms this opinion and states that hyperglycemic blood is more favorable than normal blood. Since, however, there is no difference in promotion of growth between normal blood and blood to which glucose had been added, it is concluded that diabetic blood may contain another factor, favorable for the promotion of growth of tubercle bacilli.

FLOSDORF, E. W., HULL, L. W., & MUDD, S. (1945.) **Drying by sublimation.**—*J. Immunol.* **50.** 21–54. [Authors' summary copied *verbatim.*] **2285**

The recent developments in desiccation from the frozen state have been traced and the basic principles described, including initial freezing, methods of carrying out the removal of the water-vapor, degree of vacuum, temperature of desiccation, heating the frozen product without thawing, completeness of desiccation, changes occurring during desiccation and storage, and the type of final container suitable for such products as blood plasma, blood serum, penicillin, and other substances. The factors which control the speed of drying and the ultimate limitations for the most rapid drying cycle are discussed. Much has been learned in relation to these considerations as a result of present-day large-scale production of blood plasma. The manner in which recent developments affect the selection of equipment suitable for use in research laboratories and for the production of blood plasma and other products in hospitals has been discussed.

NICHTERLEIN, O. E. (1945.) **A simple method of vascular injection and its application in preparing brain sections.**—*J. Anat.* **79.** 92–93. [Author's summary copied *verbatim.*] **2286**

1. A simple and effective method of vascular injection has been described using a silver proteinate solution as the injection fluid, and injecting directly into the heart of the living animal.

2. A modification of Bennett's rapid amyl acetate method of embedding has been found effective.

3. A procedure for cutting and mounting is described which is suitable for thick sections.

See also absts. **2134** (diagnosis of brucellosis), **2153** (culture of leptospira), **2160** (virus cultivation on chorio-allantois), **2220** (transport of conserved horse blood), **2214** (estimation of anti-fatty liver factor of pancreas), **2237** (artificial insemination of horses and goats), **2248, 2249** (vehicles for penicillin).

MISCELLANEOUS

*MOHR. (1939.) Renntierzucht in Alaska. [**Reindeer in Alaska.**]—*Zool. Gart., Lpz.* **11.** 50. [Abst. from abst. in *Berl. Münch. tierärztl. Wschr./Wien. tierärztl. Mschr.* Oct. 29th. 385. (1943.)] **2287**

Between 1891 and 1902, 1,280 reindeer from Siberia were established in Alaska to provide a means of livelihood for the Eskimos and a productive industry for the northern territory; they now number about a million.

In contrast to the other reindeer breeding districts, milk, cheese and butter are not obtained in Alaska, but the animals are used as beasts of burden and for drawing sleighs. The most important exports are hide and meat; at present gadflies deface 75–80% of the hides; meat available for consumption includes the heart, liver and tongue.

At present, herds expand at a rate of about 20% per annum as opposed to 25–33⅓% in previous years when more supervision was possible. Generally as many males as females are born; twins are rare. Yearly wastage is reckoned at about 6½% in adult animals and 15% in calves. Losses occur from parasites, disease, predatory attacks and deer escaping from the herds.—S. M. G.

EDLAND, H. (1944.) Diagnostisering av knokler fra selvdøde dyr. [**Evidence from the examination of bones as to whether death occurred naturally or the animal was slaughtered.**]—*Norsk VetTidsskr.* **56.** 267–268. **2288**

The finding of bones of animals in open country sometimes raises the question of whether the animal died naturally or whether the bones of an illegally killed animal had been left there. E. has established that after natural death followed by weathering and decomposition, hairs from the skin become firmly attached to the bones

and that this can be taken as evidence of natural death. In slaughter the skin is always removed so that the hairs have no opportunity to become attached to the bones.

He cites two instances, involving a sheep and a fox.—J. E.

*Pschorr. (1942.) Die niederländische Tierärzteordnung. **[The law relating to veterinary surgeons in the Netherlands.]**—*Dtsch. Tierärztebl.* **9.** 147–148. [Abst. from abst. in *Jber. Vet.-Med.* **71.** 155.] **2289**

Dutch law concerning the veterinarian comprises 38 paragraphs and deals among other things with the veterinarian himself, the state veterinary department, government control and the veterinary professional association. Stress is laid upon attention to the welfare and breeding of livestock. The chief object of the law is to unite all veterinarians established in the Netherlands.—S. M. G.

—. (1944.) Lothringen. Verordnung des Chefs der Zivilverwaltung zur Ergänzung der Verordnung über die Errichtung einer Tierseuchenkasse und die Gewährung von Entschädigungen und Beihilfen für Verluste durch Tierseuchen in Lothringen vom 10. September 1941 (Verordnungsbl. S.804). **Lorraine: Order of the Chief of Civil Administration concerning the order about the establishment of a compensation office for animal diseases and the granting of indemnity and assistance for losses due to disease in Lorraine.]**—*Reichsgesundheitsblatt.* **19.** 51. **2290**

Under this order, horses, asses and mules in Lorraine which have been transferred with police permission from one farm "closed" because of equine infectious anaemia to another "closed" for the same reason, become eligible for compensation, this being calculated according to the market value of the animal less the value of work given. Compensation will also be allowed if the animal dies or has to be slaughtered on account of the disease. The animal for which compensation is claimed must have been for at least a year in the possession of the owner.—S. M. G.

Great Britain. (1945.) **Diseases of Animals. The Foreign Hay and Straw (Amendment) Order of 1945.** —*Stat. Rules & Orders.* No. 463. pp. 1. London: H.M. Stat. Off. 1d. **2291**

An order by the Ministry of Agriculture and Fisheries under the Diseases of Animals Acts 1894–1937 prohibits the landing of hay and straw from the Union of South Africa (including the Mandated Territory of South-West Africa) with effect from 26th April, 1938. —M. C.

REPORT

Canada. (1942.) **Ontario Department of Agriculture. Report of the Ontario Veterinary College, 1941.** [McGilvray, C. D.] pp. 31. Toronto: Printer to the King's Most Excellent Majesty. 8vo. **2292**

The course for the B.V.Sc. degree requires five years; 196 students were enrolled. Short courses were held for veterinarians, farmers, and fur breeders, and there was a special short course in public health for senior students.

Animal clinics are held each week throughout the college session. All farm livestock, dogs, cats, and fur-bearing animals are treated and their diseases investigated.

In extension work on Bovine Brocellosis, tests were carried out on 28,020 cattle in co-operation with practising veterinarians and livestock owners. An additional 4,639 cattle were tested prior to export, 12% being positive and 5% doubtful. 5,691 calves, 4–8 months of age, were vaccinated with strain 19 vaccine and check-tested 30 days later. This vaccine is supplied free to the veterinarian carrying out the vaccination; charges for his services are paid by the owner. Calves giving no reaction to the check test are revaccinated. Supervised testing in prescribed areas is arranged by the Department of Agriculture where a group of 10 or more owners in such an area desire to have their herds tested. There are nine prescribed areas, comprising 9,631 cattle. Altogether 20,472 tests were made, of which 3% were positive and 5% doubtful.

Vitamin "A" assays of the milk of nursing sows. [Schofield, F. W., Ingle, R. T., & McFarlane, W. D.]—Deficiency was found in several cases. The feeding of cod liver oil or foods high in vitamin A has been found valuable in reducing the mortality rate of young pigs.

Malignant oedema. [Schofield, F. W.]—An outbreak occurring among sheep and another in horses and cattle were investigated.

Diseases of pigs. [Schofield, F. W., & Phillips, C. E.]—The greater part of the work of the Bacteriology and Pathology Department is on investigations of pig diseases. In most cases of Gastro-Enteritis the lesions indicate haemorrhagic gastro-enteritis. In sucking pigs, colon bacilli are found in some cases, but the majority appear to be due to dietetic errors. Eighty pigs were involved in an outbreak of Salmonella Infection and 30 were sick. The mortality was 20%. From the acutely inflamed lungs, pure cultures of *Pasteurella suiseptica* were isolated. The spleen was greatly enlarged and the pulp dark in colour, and cultures yielded *Salmonella cholerae-suis*. There was acute gastro-enteritis, the urinary bladder was congested, the kidneys showed a few petechiae, and the gall bladder was covered with well defined haemorrhages. A mixed autogenous vaccine was used containing the two organisms recovered, and the pigs were placed on the "salt-buttermilk" diet advocated for acute enteritis in pigs. A few outbreaks occurred of acute respiratory Haemorrhagic Septicaemia, characterized by lobar pneumonia and oedema of the lungs, from which *Past. suiseptica* was recovered. Swine Erysipelas continues to be one of the most serious diseases affecting pigs. Treatment with large doses of S.E. serum gives the best results, and its use is also recommended as a prophylactic in the first 7–10 days after birth. The presence of leucopenia in Swine Fever and its absence in all other pig diseases gives a ready means of differential diagnosis. Eczema in sucking pigs is apparently due to some allergenic substance in the food and the milk of the mother.

Fatal Haemorrhage Following the Feeding of Mouldy Sweet Clover. [Schofield, F. W.]—A group of young cattle had been fed sweet clover hay for a period of two weeks, when three of the males were castrated late in the afternoon, and were found dead next day from haemorrhage from the spermatic arteries. Mouldy sweet clover hay is said to cause damage also to the hepatic cells but this may be due to some substance other than dicoumarin in the damaged clover. [See also *V. B.* **12.** 240.]

Report of the Provincial Zoologist. [Stevenson, L.]—Parasitism on fur ranches has been greatly reduced by the use of wire floors for pens, improved feeding and watering equipment, and the use of pelleted foods. Distemper occurred on only two ranches; this is said to be due to better control of dogs, the recognized

distributors of distemper virus to fox and mink ranches. The health of fur-bearing animals was good, and losses from infections were light. The principal losses were from food toxaemia, inadequate rations, and poor housing.—J. A. GRIFFITHS.

See also abstr. **2209** (toxaemic jaundice, Australia, 1943–44), **2193**, **2187** (Survey Committee, N.V.M.A.).

BOOK REVIEWS

MORGAN, B. B. [Ph.D., Parasitologist and Assistant Professor of Veterinary Science, University of Wisconsin.] (1944.) **Bovine trichomoniasis.** pp. iii + 150. 4 plates. Minneapolis, Minn.: Burgess Publishing Co. 4to. $3.25. **2293**

This work forms a comprehensive survey of the world literature on trichomoniasis. A list of hosts of the genus *Trichomonas* and a valuable bibliography are included and the use of equipment for the diagnosis of bovine trichomoniasis is considered in a brief appendix. For the research worker and others working in related fields a publication such as this is of value in that it assembles in a readily available form all the information concerning this disease. Its usefulness would have been even greater if an index had been provided.

In spite of the vast amount of research carried out on the matter of diagnosis, it still appears to be a major problem; as a consequence the question of immunity, whether artificially or naturally induced, still remains unresolved.

M.'s uncritical evaluation of the work he reviews is to be deplored; this absence of comment is marked in chapters on subjects with which he has been concerned in his own researches and in the chapter headed "Miscellaneous", where various theories are expounded

While this monograph affords ample evidence of the large amount of literature which has already been published on bovine trichomoniasis, nevertheless it indicates the many problems that await solution; it should stimulate further investigation along the most profitable lines and will be of value in clarifying and confirming earlier research.—ALAN E. PIERCE.

BLOUNT, W. P. [Ph.D. (Edin.), F.R.C.V.S., Major, Royal Army Veterinary Corps.] (1945.) **Rabbits' ailments. A short treatise on the domestic rabbit in health and disease.** pp. 170. 37 figs. Idle, Bradford: "Fur and Feather". 8vo. 3s. 6d. **2294**

This small book is written for the intelligent layman but in places extends into fields somewhat beyond his ken.

Laboratory workers will find it a convenient source of information on the problems which arise wherever a stock of rabbits is maintained for research purposes. Considerable space is devoted to the biology of the rabbit relative to its ailments and this section has an interesting account of the peculiar habit of coprophagy. B. considers this to be a normal physiological reaction occurring whenever the interval between feeds exceeds about six hours, its object being to provide bulk for the stomach muscles to act upon and so facilitate the passage of ingesta to the small intestine. Useful original observations on such matters as duration of pregnancy, litter size and rate of growth are included.

The information on diseases is up to date. The frequency of albuminuria and the rarity of tumours and of cystic calculi in B.'s material are commented upon. In dealing with coccidiosis B. departs from orthodox views in some respects, for example, as to the value of diarrhoea as a diagnostic symptom and as to the value of hygiene in prevention. His opening statement on the subject of coccidiosis, that it "is a specific disease affecting the digestive system of many different species of animals (including man)" may be misunderstood by the layman.

Very little space is devoted to the rather important subject of plant poisoning. The value of the book to the average rabbit breeder would be improved by extending this section considerably.—M. C.

KAUPP, B. F. [B.S., M.S., D.V.M.], & SURFACE, R. C. [D.V.M.] (1943.) **Poultry sanitation and disease control. The complete guide to sanitation and treatment of disease.** pp. 458. Minneapolis: Kaupp & Surface. 8vo. 2nd Edit. **2295**

The second edition of this book represents the 8th edition of "Poultry Diseases" by the senior author. It has been brought up to date and includes some of the results of recent research.

The whole book is written and planned as an aid and guide to the poultry farmer and manager in the recognition and control of disease amongst his birds but is inadequate and incomplete in many respects, particularly when dealing with infectious disease where there is too much emphasis on treatment rather than on preventive measures for control. The book is not intended for the qualified reader.—J. D. BLAXLAND.

BUSHNELL, L. D. [B.S., M.S., Ph.D.] (1940.) **Poultry practice.** pp. 160. Chicago: Veterinary Magazine Corporation. 4to. Reprinted from *Veterinary Medicine*, December, 1939 *et seq.* **2296**

This booklet consists of 34 articles on poultry diseases and related subjects originally published in *Vet. Med.* in 1939 and 1940.—J. D. B.

GALDSTON, I. [M.D.] (1943.) **Behind the sulfa drugs. A short history of chemotherapy.** pp. xviii + 174. New York & London: D. Appleton-Century Company, Inc. 8vo. $2.00. **2297**

An historical account is given of the development of chemotherapy from the days of Hippocrates to the present time. The contents of the early chapters discuss the use, as chemotherapeutic agents, of dyes derived from coal tar, then the application of aniline dyes for the staining of tissues and bacteria. Chapter IV deals with the endeavour to find suitable chemical reagents to destroy pathogenic bacteria. In chapter V, mention is made of trypan red to protect mice against infection with pathogenic trypanosomes, and of methylene blue and quinine in the treatment of malaria. Chapter VI deals with the treatment of syphilis and trypanosome infections with atoxyl and 606 or salvarsan. Chapter VII discusses the achievements of the years 1910–35. Chapter VIII describes DOMAGK's (1935) results, using prontosil (sulphamido-chrysoidine). Chapter IX mentions many of the applications of sulphonamide treatment, but points out that the individual so treated is still susceptible to disease. There is no mention of emetine for the treatment of amoebic dysentery or of trypanblue for the treatment of babesiasis. The book is of considerable interest to those who take a lively interest in the phenomenal progress of curative medicine of this age.—E. M. J.

See also abst. **2247** (annotated bibliography of penicillin).

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An annotated bibliography of medical mycology, 1943. Edited by S. P. Wiltshire in collaboration with C. Wilcocks (Bureau of Hygiene and Tropical Diseases), and J. T. Duncan (London School of Hygiene and Tropical Medicine). 1944 ... ... 5s. 0d.

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